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M. RÜPING

ROADBED FOR RAILWAYS

Filed Nov. 22, 1927

Fig. 1

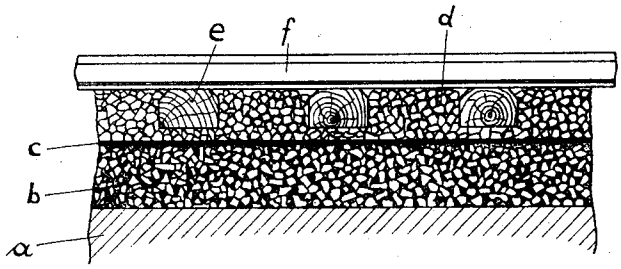


Fig. 2

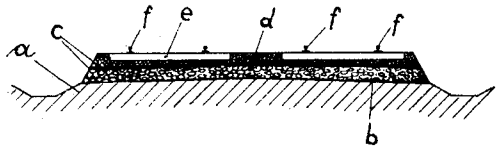
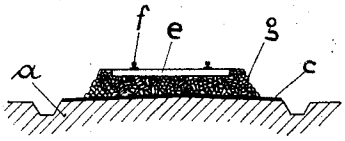


Fig. 3



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UNITED STATES PATENT OFFICE.

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ROADBED FOR RAILWAYS.

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This invention has reference to road beds for railways, and it is intended to devise means of producing a very durable and resisting surface-superstructure and to obtain other important objects which will appear from the specification and drawing. In the construction of roadbeds, as heretofore employed, a layer of coarse gravel, ballast or pebble is placed upon the bottom or foundation, the ties for supporting the rails being embedded in such layer. With certain kinds of soils, such as for instance in the case of loamy soils there is the difficulty that the bottom or foundation on account of the atmospheric influences, rainfall, snow and the like is softened below the tie and yields, and that the soil which is forced sideways from underneath the ties is subject to swelling. The formation of ruts thereby produced in view of the fact that the water will accumulate and stay in these ruts and depressions is an additional cause for the continued destruction of the roadbed.

Now in accordance with this invention these difficulties are overcome by first placing a layer of coarse gravel, pebble or ballast on the bottom, such layer being pounded or rolled in the well known manner, whereupon a filler, such as sand for instance, is incorporated with a supply of water with said layer. By means of the rolling in and the subsequent rinsing in of the sand this layer of ballast or the like becomes sufficiently resistant and impervious against the atmospheric discharges. Also the supporting capacity of such layer is considerably increased as compared with the unfilled layers of ballast or gravel. Upon the rolled and subsequently filled layer of ballast or gravel it is preferable to place loose gravel or ballast, in order to allow of the adjustment of the structure formed by the ties and the rails mounted thereon and of the proper levelling thereof. The ballast or gravel employed for the loose layer of gravel should be sufficiently coarse to not interfere with the lateral flowing off of the atmospheric discharges upon the surface of the sand-filled layer of ballast, gravel or the like. This kind of construction of the railroad bed is likewise possible without difficulty and at low expense in the case of existing railroads. Whenever required, the pounded or packed layer of ballast or gravel into which as above mentioned the sand is incorporated by washing may be provided with a water-tight covering, such as tar, bitumen, crude petroleum, petroleum-residues, asphaltum or the like. This additional safety-means will be preferably only employed below the rail joints in the case of normal railroads on account of the increased expenses.

The invention will be further described by reference to the accompanying drawing illustrating by way of example an embodiment of the principles of the invention in Figure 1 in longitudinal section, and in Figure 2 on a somewhat reduced scale in transverse section, while Fig. 3 is a transverse section showing a road bed with a single track.

In the exemplification shown in the drawing the layer of ballast or gravel *b* is laid upon the bottom or foundation *a* and is consolidated by rolling down. After the rolling an amount of sand is washed in into this layer of ballast *b*, the sand filling the interstices of the rolled layer of gravel or ballast. This layer presents already a considerable degree of imperviousness to water, so that if desired, it may suffice for the protection of the bottom *a* against atmospheric discharges without additional means. In the embodiment herein shown by way of exemplification, however, there is superimposed upon the layer *b* an additional water-proof covering *c* of tar, bitumen, crude petroleum or the like. These substances may preferably be applied alone as a coating of material, but they may also be employed after having been previously intermingled with sand, stone spalls or chips or the like, which substances may be subsequently applied. On the layer *c* ballast, gravel, pebble or the like *d* is loosely applied which latter admits of the adjustment of the level of the frame constituted by the ties *e* and the rails *f* mounted thereon, and which moreover does not prevent lateral flowing off of the water. With the construction according to this invention the undisturbed position of the track is secured, and the costs of maintenance are considerably decreased as compared with the previous constructions. The layer of gravel or ballast may even be reduced, if desired, as distinguished from the arrangements of the previous art.

Having thus described my invention it will be understood that it is not to be restricted to the exemplification shown, but in its broad aspects admits of modifications and changes,

except as otherwise appears from the appended claims.

I claim:—

1. A road bed for railroads comprising a water impermeable lower layer consisting of tightly packed gravel like material having the interstices thereof filled with sand and an upper layer of loose gravel like material in which the ties are set superposed on said lower layer.

2. A road bed for railways comprising a water impermeable lower layer, an upper layer of loose gravel-like material in which the ties are set and an intermediate layer of a tar-like material.

3. A road bed for railroads as claimed in claim 1 and in combination therewith of an intermediate layer of a tar-like material.

4. A method of making road beds for railroads comprising tightly compressing a layer of gravel-like material, filling the interstices of said layer with a filler of a similar but finer material and superposing on said layer a layer of loose ballast.

5. A method as claimed in claim 4 in which the filler of finer material is mixed with water and in a fluid condition is washed into the interstices of the lower layer.

6. A method of making road beds for railroads comprising tightly compressing a layer of gravel-like material, filling the interstices of said layer with a filler of sand and superposing on said layer a layer of loose ballast.

7. A method as claimed in claim 6 in which the filler of sand is mixed with water and in a fluid condition is washed into the interstices of the lower layer.

8. A method of making road beds of railroads comprising compacting a layer of ballast, filling the interstices in said compacted ballast with a filler of sand, covering said layer with a layer of a tar-like substance and superposing said last named layer with a layer of loose ballast in which the ties are set.

9. A method as claimed in claim 8 in which the filler of sand is incorporated in said ballast by mixing said sand with water and flowing said mixture into said layer.

In testimony whereof I affix my signature.

MAX RÜPING.