

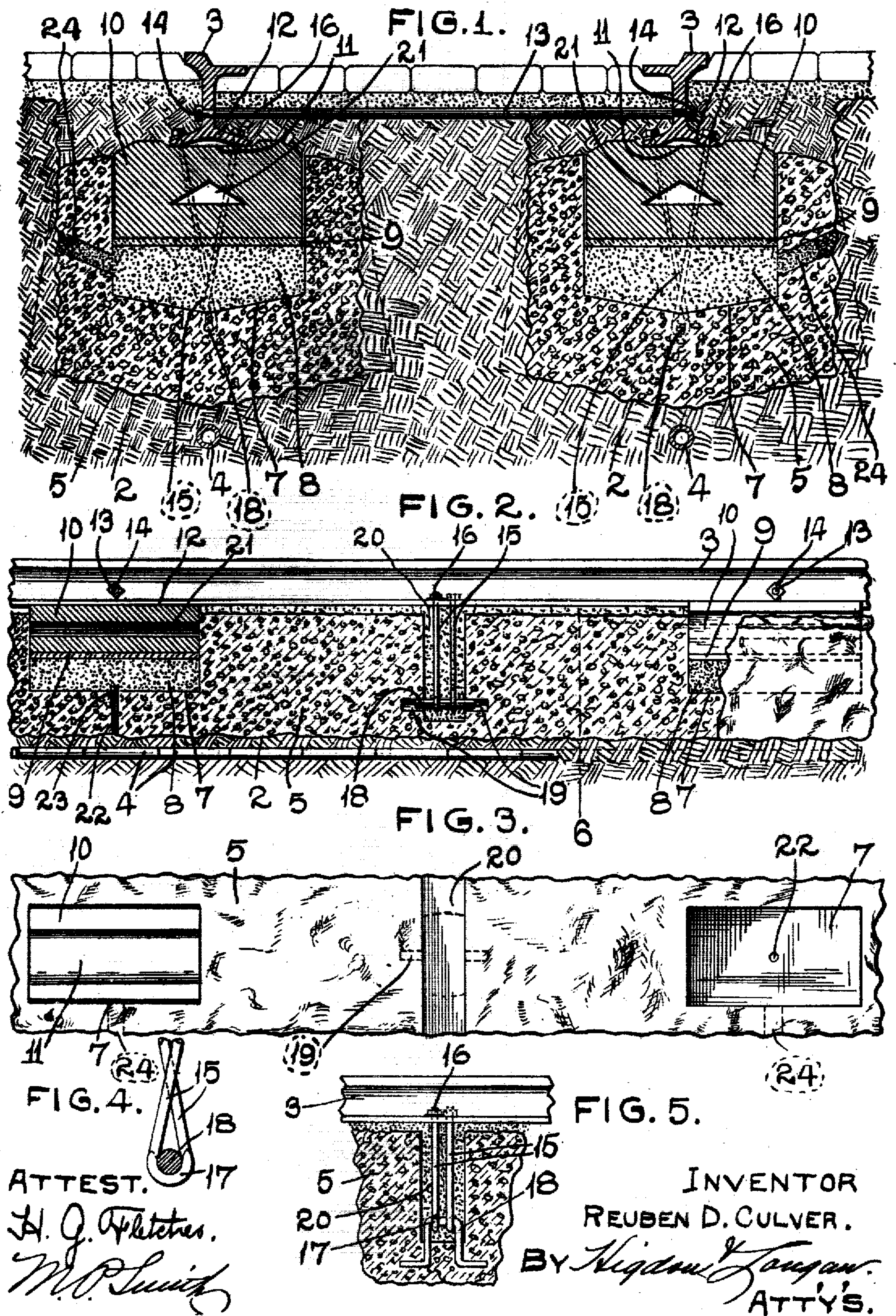
No. 828,718.

PATENTED AUG. 14, 1906.

R. D. CULVER.

TRACK CONSTRUCTION FOR STREET AND OTHER RAILWAYS.

APPLICATION FILED MAR. 7, 1906.



UNITED STATES PATENT OFFICE.

REUBEN D. CULVER, OF VEEDERSBURG, INDIANA.

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Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed March 7, 1906. Serial No. 304,700.

To all whom it may concern:

Be it known that I, REUBEN D. CULVER, a citizen of the United States, and a resident of Veedersburg, Fountain county, Indiana, have invented certain new and useful Improvements in Track Construction for Street and other Railways, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved track construction for street and other railways; and it consists in the novel elements and combination of elements hereinafter described and claimed.

The object of my invention is to provide an improved track construction for street and other railways which is practically indestructible through the action of the elements or through wear, except as to the rails.

The further object of my invention is to provide a railway-track construction which will be perfectly drained and not liable to get out of alinement because of settling and which will yet be sufficiently elastic to prevent all injurious jar or vibration.

The further object is to provide a railway-track construction wherein when the grade has been once established the same may be maintained perpetually at almost no cost.

The further object is to provide such a system of railway-track construction as will be specially adapted for use in constructing or reconstructing street-railways in populous cities and towns and in the building of subway-tracks and tracks in railway yards and terminals.

The further object is to provide a railway-track construction which will be practicable in reconstructing ordinary railway-tracks on thoroughly-settled grades.

The further object is to provide a railway-track construction which will obviate the necessity of cross-ties and yet provide an independent base for each rail, whereby should one base settle such settling will not throw upwardly the opposite rail, as is the case when cross-ties are used.

In the drawings, Figure 1 is a transverse section of a street-railway construction made in accordance with my invention. Fig. 2 is a sectional side elevation. Fig. 3 is a plan view of one of the cement-concrete bases. Fig. 4 is a detail view showing the construction of the lower end of a rail-anchor, and

Fig. 5 is a detail view of a modified construction of rail-anchor.

My improved track construction for street and other railways may be described in detail as follows:

2 2 indicate parallel trenches under the lines of rails 3, and which trenches are perfectly drained by a pipe or sewer 4, which is located centrally a slight distance below each trench 2. Within the trenches are laid cement-concrete bases 5. Said bases may be of any desired shape in cross-section to adapt them for the required service, and in some cases I prefer to make the bases with sloping or buttressed sides, as shown by dotted lines in Fig. 1, although in ordinary cases it will be sufficient to have the side walls vertical. I prefer also to make the bottom wall of the bases thicker than the side walls, as it must act as a foundation for said side walls, as well as for all other parts of the track construction. I prefer to make said bases continuous from end to end of the line; but of course same may be made in sections of any desired length, the line 6 in Fig. 2 indicating the point of separation between adjacent sections when the bases are made in sections, or the sections may be separated at any other suitable point in the length of the bases.

A suitable number of cavities 7 are formed in the upper part of the body of the cement-concrete composing the bases 5. Said cavities are preferably rectangular, but of course may be of any desired shape provided they are open at the top. They should be of uniform size. After the concrete has thoroughly set and formed its bond, a body 8, of sand, fine gravel, cinders, earth, burnt clay, or any other indestructible but slightly-resilient material, should be placed within said cavities, so as to partially fill the same, and then said body of slightly-resilient material should be thoroughly tamped and brought to the desired grade. Placed upon the body of resilient material 8, in order to hold the same in position, is a cover or packing 9, which may be in the form of a creosoted plank or a thin layer of asphalt or coal-tar composition, or any other material suitable for such purpose.

The resilient material and its cover or packing form what I term "cushions," and superimposed upon said cushions are rail-supporting blocks or sleeper-blocks 10, of any desired thickness or shape, but preferably that shown in the drawings, the same being rectangular and loosely fitting within the

cavities 7. Said blocks 10 may be made of burnt clay, cement-concrete, metal, stone, chemically-treated wood, or any other suitable and practically-indestructible material.

5 The space between the blocks 10 and the walls of the cavities is very slight and should be filled with sand, coal-tar, or other impervious but yielding material. The upper faces of the said blocks 10 preferably have a
10 central longitudinal depression 11, in which the bases 12 of the rails 3 are located. Said rails may of course be of the usual forms in cross-section; but in the present instance I have shown the bases of the rails "truss-
15 shaped" in cross-section, or, in other words, the base is arched in cross-section, thus forming a yielding or "spring" base, and thereby affording additional resiliency to the rails for the purpose of lessening the vibration or
20 jar caused by locomotives or cars.

The rails 3 are preferably gaged or spaced apart by means of tie-rods 13, the ends of which are passed through holes in the webs of the rails and secured by means of nuts 14.
25 The rails are secured to the blocks 10 by anchor-bolts 15, the upper ends of which pass through holes in the base of the rail on both sides of the web and are thereat provided with nuts 16 or equivalent securing means.
30 The lower ends of said anchor-bolts 15 are provided with hooks or bends 17, which pass around short sections of pipe or steel rods, forming anchors such as 18, and said anchors may be embedded in the concrete, as shown
35 in Fig. 5, or detachably mounted in anchor-seats 19, formed in the concrete, as shown in Fig. 2. Said anchor-bolts 15 are preferably located in transverse recesses 20, formed in the cement-concrete bases 5 at points about
40 midway between contiguous cavities 7. Said blocks 10 are preferably made hollow by means of longitudinal openings 21 in order to lighten the same.

22 indicates a small drain-passage formed
45 in the bottom of the cavities 7 and extending through the bottom wall of the concrete bases for the purpose of draining the said cavities, and the upper end of said drain 22 is preferably closed by means of a porous
50 earthenware plug or something similar thereto, whereby the sand will be prevented from passing into said drain, and yet any water may percolate through said plug 23.

24 indicates openings formed in the side
55 walls of the bases 5, said openings being for the purpose of affording means for inserting the sand or other suitable material into the cavities should it be necessary to do so in order to effect the proper alinement of the rails
60 after the track has been constructed. These openings when not used for this purpose are closed by a body of cement or any other suitable material, so as to prevent the sand, &c., contained in the cavities from working
65 out of said openings or water from finding

ingress into the cavities. By providing these openings the cushion material may be inserted into the cavities, if necessary, without dismantling the track. The bottoms of said cavities 7 are preferably inclined from oppo- 70 site sides to the center to facilitate drainage.

By reason of the above-described construction it will be observed that the resilient mounting of the rails and the resilient bases of the rails themselves will have the effect of 75 greatly lessening the wear and tear on both track and rolling-stock.

It will be further observed that there is an independent base for each rail, so that the possible settling of the base which supports 80 one rail would have no effect upon the position of the opposite rail.

I have thus shown a construction of railway-tracks (steam or electric) which is absolutely indestructible through the action of 85 the elements or through wear, except as to the rails. Being perfectly drained, the structure cannot subside or settle, yet is sufficiently elastic to properly prevent all jar or vibration. Its alinement and grade once es- 90 tablished can be maintained perpetually at practically no cost. Such a system of construction will be found of special advantage in the constructing or reconstructing of street-railways in populous towns and cities, 95 in the building of subway-tracks and tracks in railroad yards and terminals. It will be equally practicable in reconstructing ordinary railway-tracks on thoroughly-settled grades.

I claim—

1. In a railway-track construction, a concrete base extending longitudinally beneath each track-rail, and rail-cushions arranged at intervals in the tops of said bases; substantially as specified. 100

2. In a railway-track construction, a concrete base extending longitudinally beneath each track-rail, there being cavities formed at intervals in the tops of the bases, and rail-cushions arranged in said cavities; substan- 105 tially as specified.

3. In a railway-track construction, a concrete base extending longitudinally beneath each track-rail, there being cavities formed at intervals in the top of each base, rail-cush- 115 ions arranged in said cavities, and track-rails supported by said cushions; substantially as specified.

4. In a railway-track construction, a concrete base extending longitudinally beneath 120 each track-rail, there being cavities formed at intervals in the top of each base, rail-cushions arranged in said cavities, rails mounted on said cushions, and means whereby said rails are rigidly connected to the bases; sub- 125 stantially as specified.

5. In a railway-track construction, a concrete base extending longitudinally beneath each track-rail, there being cavities formed at intervals in the tops of each of the bases, 130

cushions located in the bottoms of the cavities, and rail-supporting blocks located in said cavities above the cushions; substantially as specified.

5 6. An improved track construction for street and other railways, comprising concrete bases, there being cavities formed in said bases at intervals of the length of same, a body of sand or other slightly-resilient material in certain of said cavities, a cover or packing placed upon said body of resilient material, rail-blocks placed within said cavities upon said cover or packing, rails mounted upon said rail-blocks, means for securing the bases of said rails in position upon said rail-blocks, and means for gaging the rails; substantially as specified.

7. An improved track construction for street and other railways, comprising concrete bases, there being cavities formed in said bases at intervals of the length of same, a body of sand or other slightly-resilient material in certain of said cavities, a cover or packing placed upon said body of resilient material, rail-blocks placed within said cavities upon said cover or packing, rails mounted upon said rail-blocks, means for securing the bases of said rails in position upon said rail-blocks, means for gaging the rails, and the upper faces of said rail-blocks having longitudinal depressions in which said rails are located; substantially as specified.

8. An improved track construction for street and other railways, comprising concrete bases, there being cavities formed in said bases at intervals of the length of the same, a body of sand or other slightly-resilient material in certain of said cavities, a cover or packing placed upon said body of resilient material, rail-blocks placed within said cavities upon said cover or packing, rails mounted upon said rail-blocks, means for securing the bases of said rails in position upon said rail-blocks, means for gaging the rails, anchors mounted in said bases and bolts connecting the bases of the rails to the said anchors; substantially as specified.

9. An improved track construction for street and other railways, comprising concrete bases, there being cavities formed in said bases at intervals of the length of the same, a body of sand or other slightly-resilient material in certain of said cavities, a cover or packing placed upon said body of resilient material, rail-blocks placed within said cavities upon said cover or packing, rails mounted upon said rail-blocks, means for securing the bases of said rails in position upon said rail-blocks, means for gaging the rails, anchors detachably mounted in said bases, and bolts connecting the bases of the rails to the said anchors; substantially as specified.

10. In a track construction for street and other railways, the combination of independent cement-concrete bases having a series of cavities, cushioning devices mounted in said cavities, rails mounted upon said cushioning devices, the bottom of said cavities being inclined, a drain-passage in the bottom of said cavities, and a porous plug at the upper end of said drain-passage; substantially as specified.

11. In a railway-track construction, a pair of rail-bases formed of bodies of concrete extending parallel with each other and arranged longitudinally beneath the track-rails, and cushions arranged at suitable intervals in the tops of said bases; substantially as specified.

12. In a railway-track construction, a pair of rail-bases formed of bodies of concrete extending parallel with each other and arranged longitudinally beneath the track-rails, cushions arranged at suitable intervals in the tops of said bases, and means whereby track-rails are anchored to the bases; substantially as specified.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

REUBEN D. CULVER.

Witnesses:

M. P. SMITH,
EDWARD E. LONGAN