F. L. PITMAN.

ROADWAY.

APPLICATION FILED JAN. 3, 1916.

1,316,182.

Patented Sept. 16, 1919.

3 SHEETS—SHEET 1.

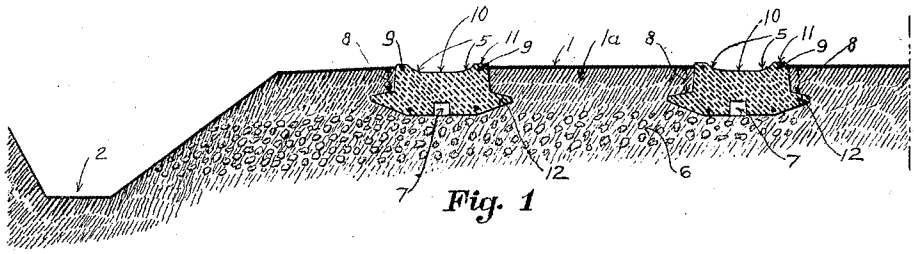


Fig. 1

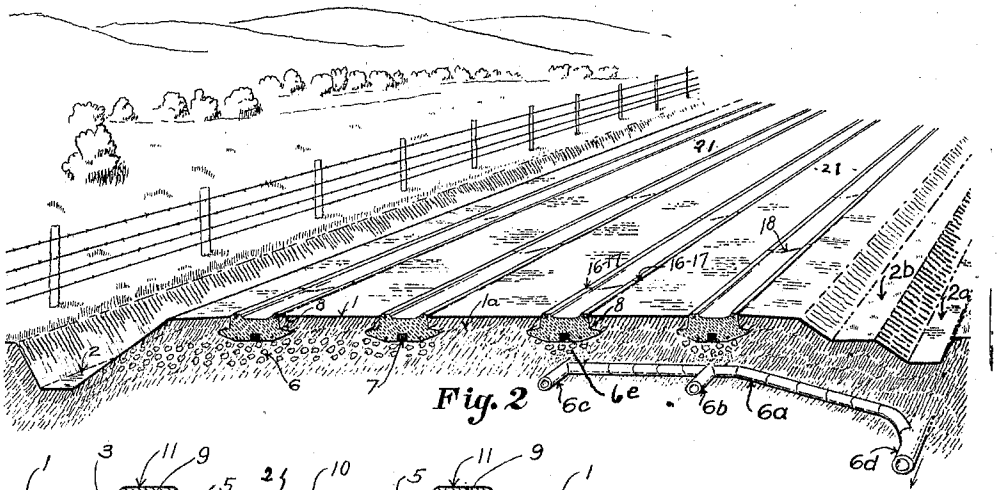


Fig. 2

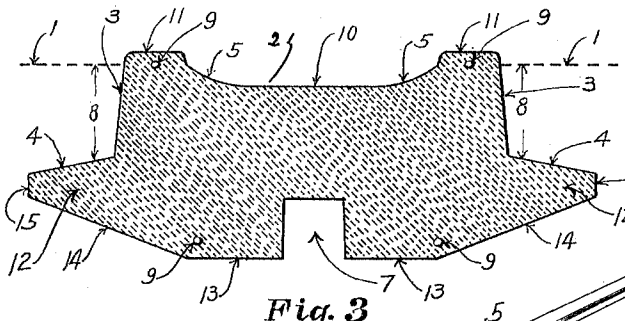


Fig. 3

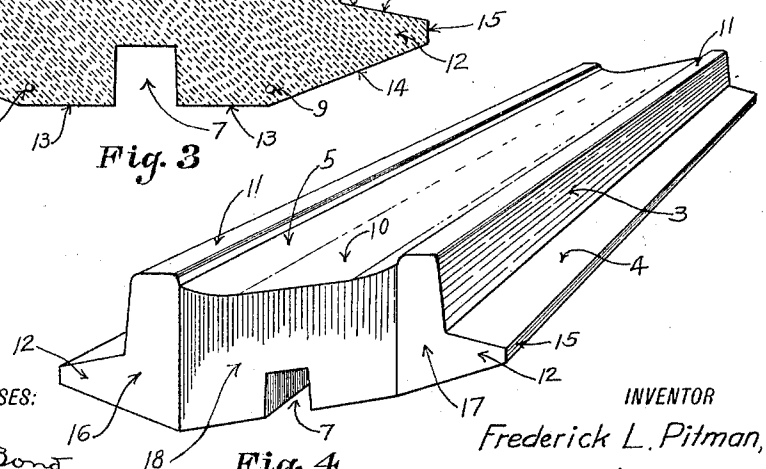


Fig. 4

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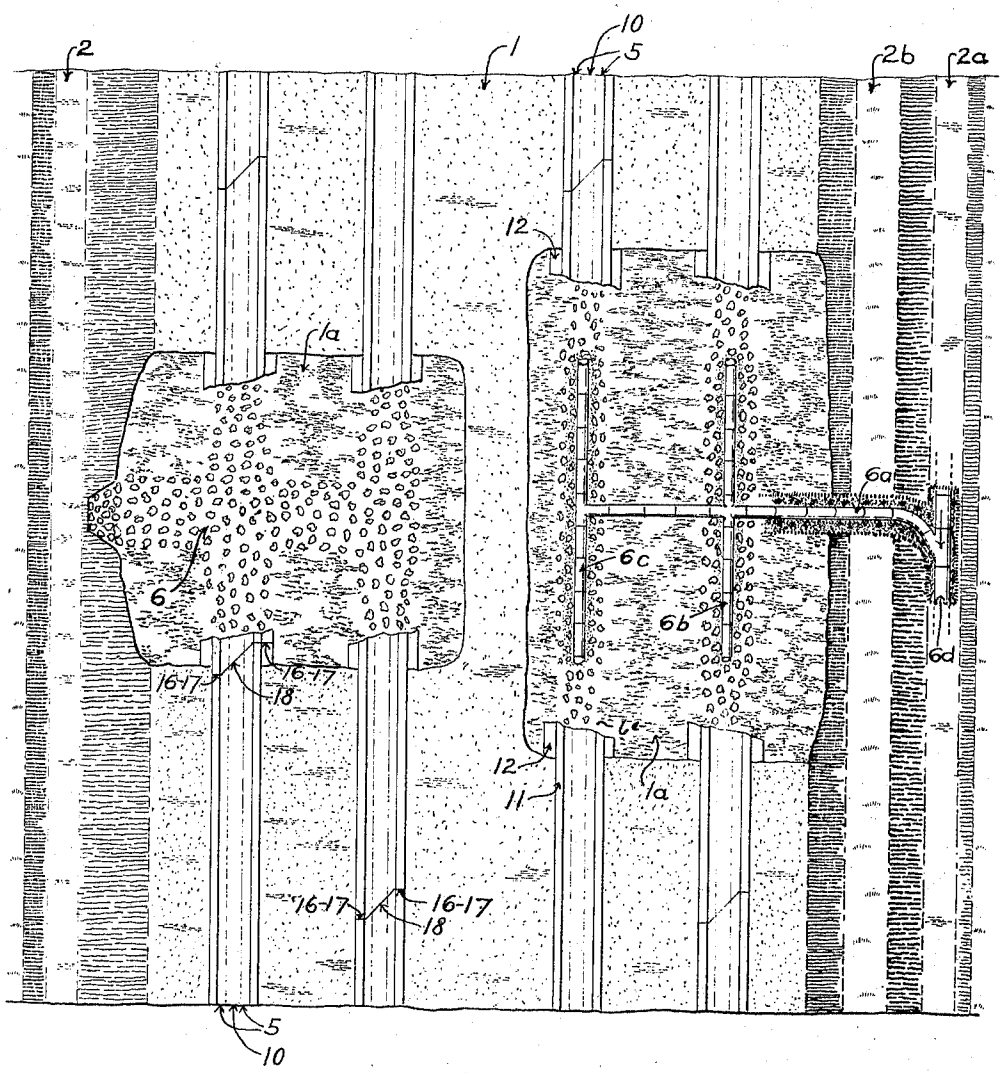


Fig. 5

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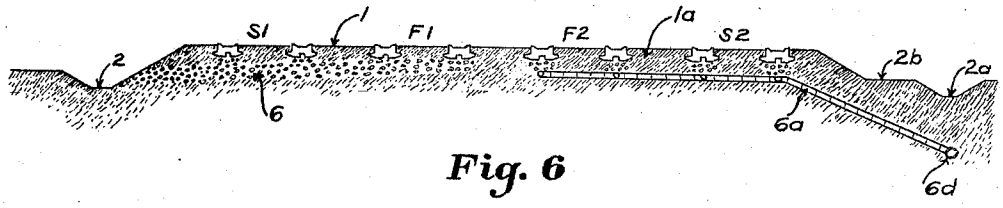


Fig. 6

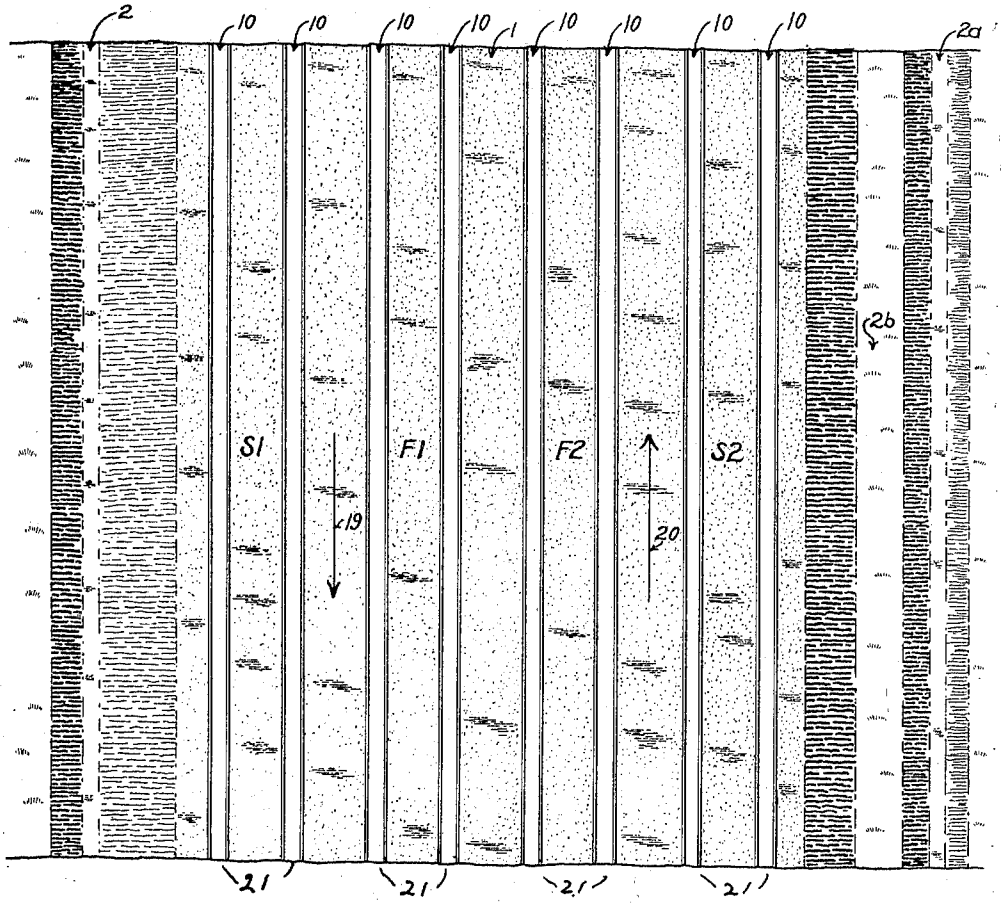


Fig. 7

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UNITED STATES PATENT OFFICE.

FREDERICK L. PITMAN, OF SPOKANE, WASHINGTON.

ROADWAY.

1,316,182. Specification of Letters Patent. Patented Sept. 16, 1919.

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To all whom it may concern:

Be it known that I, FREDERICK L. PITMAN, a citizen of the United States of America, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Roadways, of which the following is a specification.

This invention pertains to rail roadways of a type especially adapted for automobiles, automobile trucks and other power driven vehicles and their trailers.

The object of the invention is to provide a roadway especially adapted for automobiles, automobile trucks and other power driven vehicles and their trailers so as to take care of and provide for the increasing tendency to haul and to carry passengers and freight by means of the vehicles mentioned, and the same requires details of construction, both as to rails, plurality of tracks and special road provisions, which have been worked out in detail and illustrated in the accompanying drawings and which will be hereinafter particularly described and set forth in the appended claims.

In the accompanying drawings

Figure 1, is a transverse sectional view of one-half of a roadway constructed after the plan of my improved roadway showing two rails and a drainage ditch for draining both the roadbed and surface. The other half of the roadway may be either supplied with a set of rails or finished with a gravel or other surface suitable for team and wagon travel,

Fig. 2, is a perspective view of such roadway showing both gravel and tile cross-drains in section,

Fig. 3, is a detail transverse sectional view of one of the rails of the roadway,

Fig. 4, is a detail perspective view of one of the rails of the roadway,

Fig. 5 is a plan view of the roadway with the rails and surface of the roadway broken-away to show detailed arrangement of cross-drains,

Fig. 6, is a transverse sectional view of a four track roadway showing cross-drain of gravel upon one side and a tile cross-drain upon the other side, and

Fig. 7, is a plan view of such roadway.

Although a part of the drawings show that the rails are made up of sections or lengths I do not wish to be restricted to this mode of construction. Upon the contrary it is specifically stated that the rails may be either continuous or of suitable lengths, this feature being determined by the conditions surrounding the construction and maintenance of the roadway. In case the rails are continuous no provision for joints is necessary, but if in lengths then the joints are of the particular design shown in the drawings and as described and claimed herein.

Also, a set or sets of rails may be installed adjoining one side of a general traffic highway and the track or tracks thus provided used by motor vehicles while the remainder of the road will be available for teams and wagons. Inasmuch as gravel or macadam, the best, cheapest and most permanent surface for team travel, and concrete, the best, cheapest and most permanent surface for motor travel, may in this way be made available, respectively, for each, the effect in operation will be to separate the travel into motor and non-motor classes,—a result greatly desired. Furthermore, an inspection of the drawings will show that the rails interpose an obstruction to the travel of horses, while motor propelled vehicles having soft tires enter, travel upon and leave the tracks with ease. From choice, therefore, motor traffic will occupy the tracks and team traffic the adjoining surface. Thus will a dual roadway of this kind automatically separate motor from team and wagon travel and at the same time provide the surface best suited for the use of each of the two classes of traffic.

In a detail description of the parts in which like numerals refer to like parts throughout the several views I will first call attention to Figs. 3 and 4 wherein a preferred form of rail construction is shown and which will now be described.

The rail has a substantially horizontal centrally disposed tread 10 with curved approaches 5 leading thereto from the flanges 11 at each side. Downwardly and outwardly extending surfaces 3 reach from the flanges 11 and connect with the surfaces 4 of an outwardly extending web 12 (on both sides of the rail). The surfaces 4 extend downwardly and outwardly and connect with vertical blunt surfaces 15 which constitute the extreme outward portions of the rail. The surfaces 15 connect with inwardly and downwardly extending surfaces 14 which in turn connect with horizontal sur-

faces 13 constituting the extreme bottom portion of the rail. Centrally disposed and longitudinally arranged between the surfaces 13 is a groove 7. Reinforcing bars or rods 9 extend longitudinally through the body of the rail which is preferably of a cement or concrete consistency. This reinforcement may be placed where desired, and it is thought that ordinarily four bars or rods spaced approximately as shown in Fig. 3 will serve the desired purpose. The specific application of the different rail portions will be hereinafter explained.

A roadway 1^a of suitable material may be provided with blind cross-drains 6 leading to side longitudinally arranged drainage ditches 2 (Figs. 1 and 2) for the drainage of both roadbed and surface. As an alternative method side ditches 2^a for the drainage of surface waters may be provided, with berm 2^b for the protection of the base of the roadway, and for the drainage of the roadbed buried longitudinally arranged tile 6^d provided with tile cross-drains 6^a which connect with longitudinally arranged arms of tile 6^b and 6^c of suitable length and closed ends (Fig. 5) lying parallel with and underneath the road rails 21 with a porous filling in the roadbed between the tile arms 6^b and 6^c and the rails 21 such as gravel 6^e. The province of the blind cross-drains and the alternative tile cross-drains with their tile arms is to catch or trap the drainage water carried by the grooves 7 and lead it away from the roadbed 1^a and into the side ditches 2 or drainage tile 6^d.

I will now take up the application of the different surfaces of the road rails 21. While I may appear to place emphasis upon details of construction as to the rails that seem frivolous yet this is not so in view of the fact that in this class of roadways the rails must serve as both rails and ties, provide for drainage and act as a guide for the wheels of the automobiles, trucks, trailers or other vehicles traveling upon the roadway. The tread 10, of course, is for carrying the wheels of the said vehicles and the curved sides 5 provide a mild guide to keep the wheels upon the tread 10 without the necessity of any guiding by the driver. In fact, so far as guiding or steering is concerned the driver may be dispensed with. Steering is necessary only on leaving a track. The space 8 between the web 12 and the surface 1 of the roadway is filled with roadbed and surfacing material, the web 12 serving as a support therefor. The web 12 also when the rails are embedded in the roadway as shown in Figs. 1 and 2 assists in the substantial balancing and support of the rails and provides a strong anchorage for them in the roadbed, while the surfaces 3, 4 and 14 direct a drainage from the sides and bottom of the rails 21 toward the centrally disposed drainage groove 7 which connects with the gravel drains 6 or tile drains 6^b and 6^c as the case may be.

When the rails 21 are embedded and joined in the roadbed they are each independently supported and held in line by the roadbed materials under and upon each side of them. By increasing or decreasing these materials each rail may be separately realined or resurfaced in case, when the roadbed is new, any settlement should occur. But realinement or resurfacing is unnecessary after settlement, as such rails properly embedded in a settled roadbed have under traffic remained immovable for long periods of time and at all seasons of the year. It is therefore proven that the tracks of the roadway under settled conditions will retain their surface and line indefinitely.

I will next consider the rail joint.

This is not an ordinary diagonal joint. This joint is not only formed in such a manner that wheels pass over the same on an angle but is so constructed in combination with the outer rail surfaces that when the rails 21 are embedded in the roadbed their ends are held in perfect alinement without other aid. The rails are also symmetrical and interchangeable, and either end of any rail may pe joined with either end of any other rail.

It will be observed (Fig. 4) that the ends of the tread 10 and curved portions 5 of the rails 21 are on an angle while the end of the side portion 12—16 is an extended square joint and the end of the side portion 12—17 is a recessed square joint. This distinctive construction combined with the pressure and weight of the roadbed materials occupying the space 8 provides that the rails 21 when embeded in the roadbed will be held in perfect alinement. A joint is shown in Fig. 2 wherein numerals 16—17, and16—17 indicate the joined surfaces of the square portions of the ends of the rails and 18 indicates the joined angular end surfaces crossing the tread 10 and curved portions 5. It might be mentioned that trucks and trailers carrying heavy loads are provided with wheels having wide tires. The effect of such a wheel passing over a diagonal joint is that the load is supported by both of the adjoining rails at the time of passing from one rail to the other.

As regards cross-drains either of gravel 6 or of tile 6^a it is understood that the same are to be installed at intervals as required by the character of the soil or other materials encountered and by the undulations or depressions of the grade line.

Inasmuch as this character of roadway is calculated for a special traffic carried on by automobiles, automobile trucks, trailers and other power propelled vehicles, some of slow speed and some of fast speed, and for trans-

portation of all kinds and classes, I have shown in Figs. 6 and 7 four sets of road rails, two sets adapted for travel in one direction and two sets adapted for travel in the opposite direction; for instance, of the two sets of rails to the left the track S^1 may be assigned to and reserved for slow traffic and the track F^1 assigned to and reserved for fast traffic in the direction of the arrow 19 and used for that purpose, and of the two sets of rails to the right the track F^2 may be assigned to and reserved for fast traffic and the track S^2 assigned to and reserved for slow traffic in the direction of the arrow 20 and used for that purpose. By the addition of other tracks the traffic may be further separated and classified as to its occupancy of tracks to any desired extent. Also the tracks may be so located and spaced with respect to each other as will serve any specific purpose of traffic. All this is made possible and practicable by the automatic control of vehicles in retaining them upon and directing them along the specially constructed tracks of the roadway in groups and classes conforming with prescribed rules of traffic. A vehicle will not travel along the roadway without occupying a track, and naturally and for convenience that track is selected corresponding with the direction, speed and class of the vehicle. Accordingly, by the use of the rails in combination with the roadbed as described a plural track roadway may be formed which not only furnishes a perfectly smooth surface upon which vehicles may travel without the need of steering from side to side to avoid other vehicles, but also one which automatically separates and classifies the traveling vehicles with respect to direction, speed and character of loading (passenger or freight). The advantages in safety, increased speed, greater capacity of roadway, etc., are obvious.

It is well understood, of course, that plural track railways are common and that separate tracks for the opposing directions and different classes of traffic greatly increase the efficiency of such railways, but their operation is not in any degree automatic. Trains traveling in different directions and of different classes are led upon the tracks assigned to each direction and class by means of switches and crossovers, while upon my improved roadway the vehicles traveling thereon may be steered from one track to another at will and at any point upon the roadway, yet, at the same time, each vehicle is forced in avoiding traffic to occupy that track upon which by its direction and class it properly belongs. Herein lie the automatic features of my roadway, and it is confidently asserted that no roadway or railroad has ever before been designed or constructed embodying the features of automatic control of the traffic passing over it which are herein described and provided, or, in fact, any automatic control whatsoever.

In the construction of the rails 21 it will be understood that the upper edges will be slightly rounded to present a smooth and strong surface, when embedded in the roadway, to the tires of wheels passing along or across them. Rails made in this manner of well proportioned concrete will not be worn by the rubber tires of power driven vehicles and will therefore be permanent, a permanent roadway being one of the important objects of my invention.

What is claimed is,

1. In a roadway for automobiles, automobile trucks and other power driven vehicles and their trailers, track rails for embedment in the roadbed having substantially a horizontal tread along their upper faces, concave surfaces on each side thereof and connected therewith on a downward curve, and flanges, one adjoining the outside of each of said surfaces, said tread, concave surfaces and flanges being integral with the lower and embedded portion of said rails.

2. In combination, track rails for automobiles, automobile trucks and other power driven vehicles and their trailers, said rails being intended for embedment in a general traffic highway, they having substantially a horizontal tread upon their upper faces, and flanges to retain and direct the wheels upon and along the rails, one adjoining each side of and extending above the tread, said tread and flanges being integral with the lower and embedded portion of said rails, with a roadway for general traffic, a part of which is comprised of a surface adapted for team and wagon travel and the remainder of the roadway adapted for the exclusive travel of motor vehicles by the embedment therein of the said rails.

3. In a roadway for automobiles, automobile trucks and other power driven vehicles and their trailers, track rails for embedment in the roadbed having substantially a horizontal tread along their upper faces, concave surfaces on each side thereof and connected therewith on a downward curve, flanges, one adjoining the outside of each of said surfaces, webs near the base of the rails extending outwardly beyond the flanges, one on each side thereof, and substantial spaces between the top of the flanges and said webs for the filling of roadbed material.

4. In a roadway for automobiles, automobile trucks and other power driven vehicles and their trailers, track rails for embedment in the roadbed having substantially a horizontal tread along their upper faces, concave surfaces on each side thereof

and connected therewith on a downward curve, flanges, one adjoining the outside of each of said surfaces, webs near the base of the rails extending outwardly beyond the flanges, one on each side thereof, substantial spaces between the top of the flanges and said webs for the filling in of roadbed material and a longitudinally arranged open groove centrally disposed in the bottom of the rails.

5. In a roadway for automobiles, automobile trucks and other power driven vehicles and their trailers, track rails for embedment in the roadbed having substantially a horizontal tread along their upper faces, concave surfaces on each side thereof and connected therewith on a downward curve, flanges, one adjoining the outside of each of said surfaces, webs near the base of the rails extending outwardly beyond the flanges, one on each side thereof, substantial spaces between the top of the flanges and said webs for the filling in of roadbed material, there being an outward slope to the walls of the rails beyond the flanges and a downward slope to the top surface of the webs from the walls of the rails outward, and blunt outer edges to said webs.

6. In combination, track rails for automobiles, automobile trucks and other power driven vehicles and their trailers having a tread along their upper faces, substantially horizontal in cross-section, longitudinally arranged, concave surfaces on each side of said tread and connected therewith on a downward curve, flanges, one adjoining the outside of each of said surfaces, webs near the base of the rails extending outwardly beyond the flanges, one on each side thereof, a longitudinally arranged open groove centrally disposed in the bottom of the rails with a roadway in which the rails are substantially embedded, the roadbed materials filling the spaces above the rail webs to substantially the top of the flanges.

7. In combination, track rails for automobiles, automobile trucks and other power driven vehicles and their trailers having a tread along their upper faces, substantially horizontal in cross-section, longitudinally arranged, concave surfaces on each side of said tread and connected therewith on a downward curve, flanges, one adjoining each of said surfaces on the outside thereof, webs near the base of the rails extending outwardly beyond the flnages, one on each side thereof, a longitudinally arranged open groove centrally disposed in the bottom of the rails with a roadbed in which such rails are substantially embedded, the roadbed material filling the spaces above the rail webs to slightly below the top of the flanges.

8. In a roadway for automobiles, automobile trucks and other power driven vehicles and their trailers, rails composed of a suitable non-metal substance, preferably concrete, having a tread longitudinally arranged in their upper surfaces and an elevated portion on each side thereof, such rails being in appropriate lengths and having diagonal ends across the tread portion thereof, the other and outer portions of the rail ends being at right angles with the sides of the rails, the portion on one side of said angular portion being symmetrically extended and the portion on the other side thereof being symmetrically recessed to meet the said diagonal portion; the said elevated portion being supported throughout the length of the rail by an outer surface or wall adapted to hold the adjacent rails in line at the joints by means of the interlocking effect of the diagonal portion of the rail ends combined with the horizontal pressure against said surface or wall of the roadbed materials in which the rails are embedded.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK L. PITMAN.

Witnesses:
R. W. AYERS,
J. H. GWINN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."