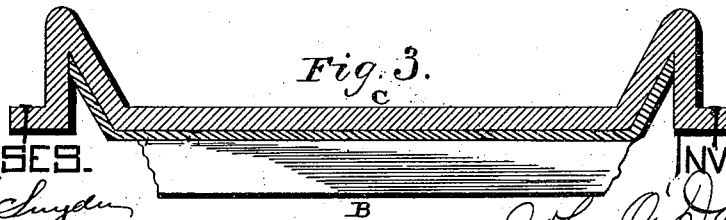
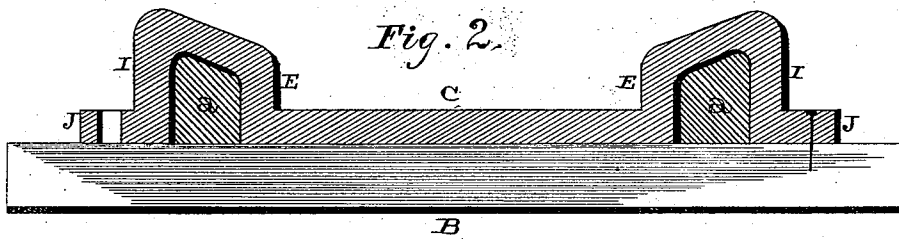
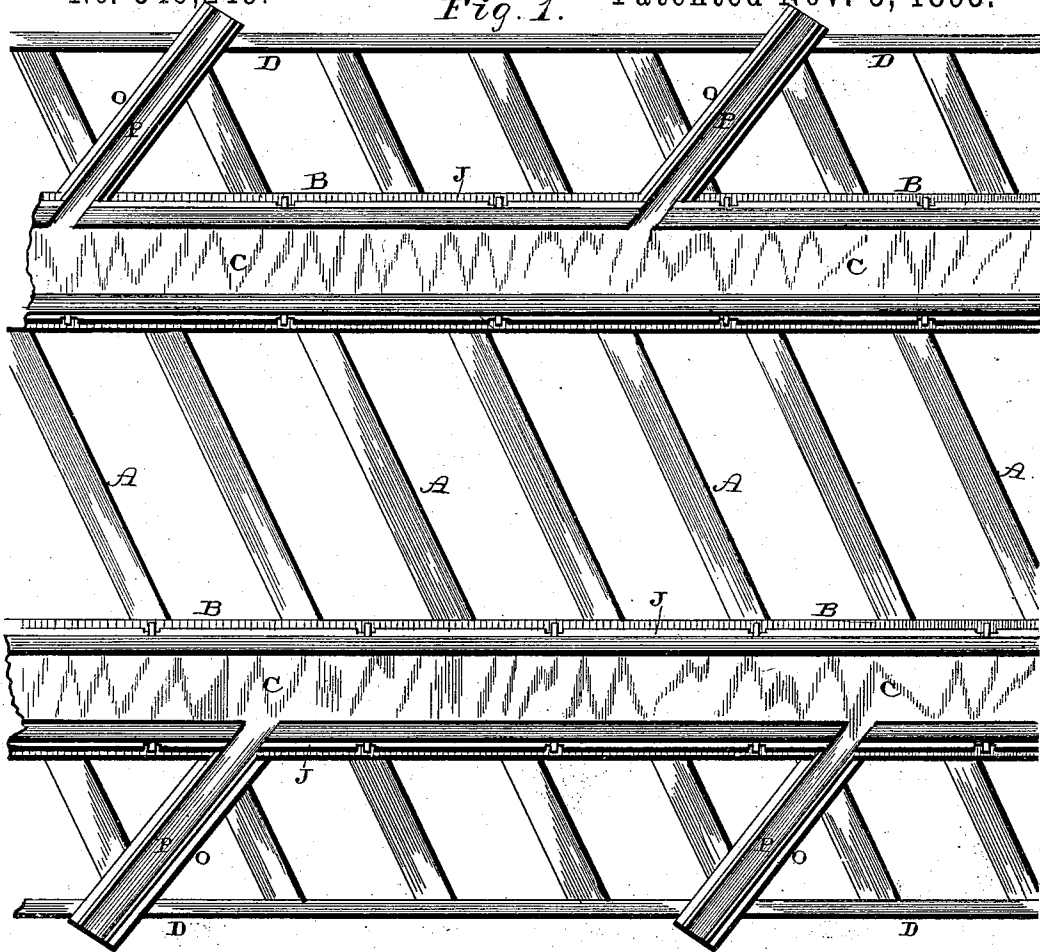


J. O'DONNELL.
ROADWAY.

No. 549,249.

Fig. 1. Patented Nov. 5, 1895.



WITNESSES.

Geo. H. Snyder
C. W. Curtis

INVENTOR.

John C. Donnell,
by Franklin H. Hough
att'y.

(No Model.)

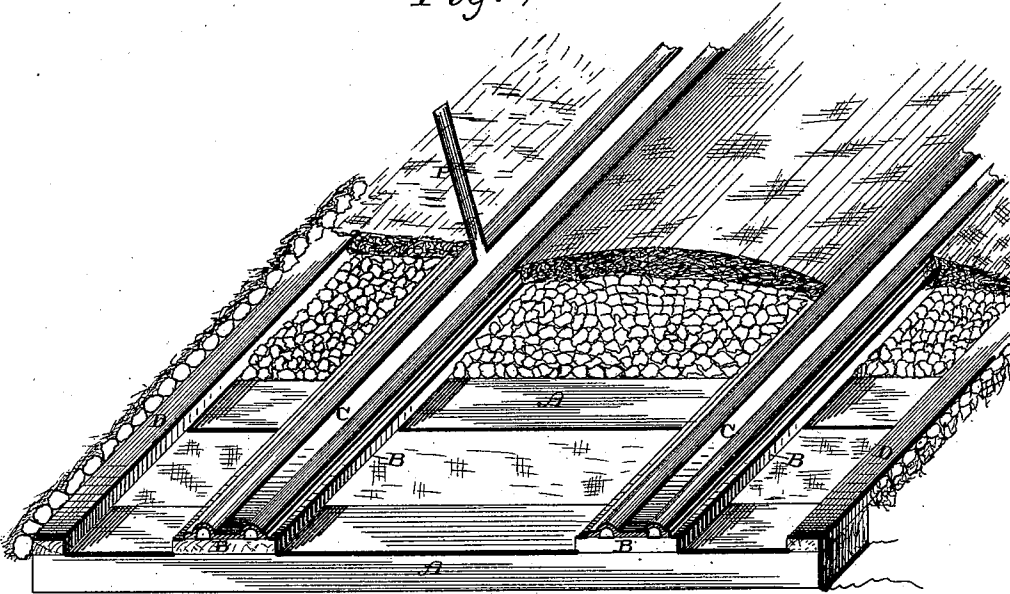
2 Sheets—Sheet 2.

J. O'DONNELL.
ROADWAY.

No. 549,249.

Patented Nov. 5, 1895.

Fig. 4.



WITNESSES.

Geo. H. Snyder
C. W. Curtis

INVENTOR.

John O'Donnell
By Franklin D. Hough
Atty.

UNITED STATES PATENT OFFICE.

JOHN O'DONNELL, OF LOWVILLE, NEW YORK, ASSIGNOR TO JESSIE F. O'DONNELL, OF SAME PLACE.

ROADWAY.

SPECIFICATION forming part of Lettens Patent No. 549,249, dated November 5, 1895.

Application filed June 15, 1895. Serial No. 552,910. (No model.)

To all whom it may concern:

Be it known that I, JOHN O'DONNELL, a citizen of the United States, residing at Lowville, in the county of Lewis and State of New York, have invented certain new and useful Improvements in Roadways; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in roadways; and it consists in ties which are sunk in the surface of the road, outside planks or stringers which are attached to the tops of the ends of the ties, and planks or timbers which form supports for the steel rails, combined with the steel rails of suitable shape and construction, and conduits placed at suitable distances apart and serving to conduct the water from the rails or roadway to one side of the road, as will be more fully described hereinafter.

The object of my invention is to provide a cheap and simple roadway upon which vehicles of all kinds, road-wheels, and electric or other motors can be run and in which the wheels will run directly upon metallic rails which afford the very least resistance to the wheels and upon which the largest loads can be drawn with the greatest ease.

In the accompanying drawings, Figure 1 is a plan view of the parts which constitute my invention. Fig. 2 is a vertical cross-section of a rail, showing one form of the track-rails that may be used. Fig. 3 is a similar view showing another form of the track-rails. Fig. 4 is a perspective of my road-bed.

In making my improved roadway the dirt road is first graded, and then upon this graded surface the ties or cross-timbers A are placed, and which may either extend directly across the road or diagonally, as may be preferred. These ties are preferably four by eight inches in diameter and of sufficient length to lay the rails upon, but preferably extend out beyond the rails on both sides, so as to support the outside of the road-bed and form and preserve a grade outside of the steel rails. These ties

extend outside of the rails about three feet for an ordinary road, but may extend any distance desired for the road-bed or may be only the width of the metal rails, and after having been leveled and properly embedded in the earth two flat pieces of timber B (preferably three by twelve inches) are laid lengthwise, one on each side, to support the steel track-rails C for wagons and other vehicles, and which rails are laid about four feet six inches from center to center. The timbers B are spiked to the ties, breaking joint in the usual manner.

To the extreme ends of the cross-ties are secured pieces of hard timber D, about three by four inches, and which, or metal stringers, may be let into the ties or spiked upon their tops or ends, as may be preferred, or a metal piece may be used, preferably of the form of an inverted V, with flanges to spike to the cross timbers or ties. They serve to keep the ties in place and make a gage for the grade of the sides of the road and preserve the proper alignment, and they also form a crib for stones or other material for the road-bed. The proportions of the timbers D are governed by the grade desired outside of the rail, which in all cases must be sufficient to carry off the water from the track to the side of the road.

Upon the tops of the timbers B the metallic rail C is laid, and while any suitable metal may be used I prefer to make the sections of steel. The shape of the rail may vary considerably, as shown in Figs. 2 and 3; but I prefer the form shown in Fig. 2, in which the edges of the rail are raised a suitable distance for the purpose of keeping the wheels in and on the rails, which is very necessary when the rails are used for motors.

I prefer to form the edges integral with the plates, in which case the inside edge rises perpendicularly, as shown at E, and then the top edge is rounded or beveled to any suitable degree, while the outside edge I is perpendicular or may incline in or out.

Upon the bottom of the outside edge is formed a suitable flange J, and in the edges of this flange are formed suitable slots for the bolts, by which the rails are secured to the timbers, the slots allowing a free expansion

and contraction of the metal. The outside edges of the rails are preferably, made perpendicular but may be at an angle and form shoulders, up against which the stone, gravel, or other material out of which the road is made is packed. Inside of this turned-up edge of the rails, when side timbers are not used, is placed, preferably, a wooden filling *a*, which serves to brace the metal from the under side and thus prevent the edge from being crushed down by heavy vehicles. The curved or beveled top of the edge is necessary to give the required strength. If the raw edge of a steel rail is left without this protection, it would soon be displaced, having nothing to hold it in position. Instead of the perpendicular walls on the inside of the edges of the rails these edges may be inclined outward at a suitable angle, rounded or beveled upon the top, and perpendicular or nearly so on the outer sides only. The hollow spaces in the under sides of the edges may be filled or braced by wooden strips in any suitable manner, as I do not limit myself in this respect.

The metal rails being secured in position at their outer edges only, no spike-heads or bolts are exposed on the surface of the track to offer impediments to the wheel and to make the track more or less rough. When the wooden-rail timbers have timbers spiked to the sides, the metal rail has the flange omitted, and is fastened to the sides of the lower rail-timbers in the manner of the others, with bolts fitting in slots, which make the sides firm and solid. When a curve is made in a road, the wide rail-timber is used and the metal track is made in pieces of the desired curve, the bottom being separate and fastened with bolts in slots, and the sides are fastened in the same manner, resting either on the metal plate or on the wood close to the sides of the metal bottom plate, so as to prevent leakage of water. The metal rail may be thicker on the bottom where the wheels come in contact, growing thinner toward the edges.

It is absolutely necessary to carry off all water from the road-bed as quickly as possible, for if the water is allowed to stand the destruction of the road-bed is only a matter of time. For the purpose of carrying away the water suitable timbers *O*, preferably, are placed diagonally across the ends of the ties *A*, extending from the rail outward over the timbers *D*, and upon these timbers *O* are placed metallic plates, which are curved so as to form conduits for the water, and which curved metal plates *P*, open or closed, are preferably not quite as high as the bottom of the metal rail, but fit close to it, so as to carry away the water; but these conduits may be attached to the bottom of the rail and lead out under it. All of the water that falls upon the raised roadway between the rails at once drains into the tracks, and then the water from the tracks is carried off to the outside of the road by the conduits. The timbers upon which the plates *P* are placed

fit up closely between the inside and outside of the rails to hold the rails in place, and also to allow the rails to expand and contract and to prevent leakage of water at the joints of the rails. Suitable openings are made into the edge of the rails at convenient points, and the conduits extend outward from these openings at any desired angle. While a metal conduit is best, a paved or cement one may be used to carry off the water, and should be well built under any circumstances, so that heavy teams can pass over them. In case of a double-track road the conduit may cross the roadway to the main conduit.

A modification of my main metal track-rail may be made by using a flat metal bottom and wooden or metal edges or sides, which are given any desired shape. In this case the road-bed is graded, cross-ties are placed, and the rail-timbers are laid, as in the first instance. Upon the tops of the rail-timbers flat pieces of metal of any desired thickness or length, and which are provided with slots in their edges for spikes, are placed. The road superstructure is now ready for finishing. I prefer crushed stone for filling after the ties have been filled up to a level with their tops with cobble or broken stone, as shown. The center of the roadway between the rails is filled in the same way, care being taken to tamp the material down solid. When the center is filled up to within two to four inches of the top, I begin the grading from the rail to rail with small sharp stones that will pass through a two-inch sieve. The stones as laid are tamped down very firmly against the edges of the steel-rail plate and also to the outside timber and around the conduits. The outside course should be kept wet during the tamping, the object being to unite the stone so as to form an impervious crust against water on the surface. The grade outside is made more nearly perfect than in any other road by using a curved straight-edge from the rails to the outside stringer, leaving the edge of the road a little crowning in the center. The middle of the road is filled in the same manner, leaving the center about two inches higher than the edge of the track-rail. The road should now be covered one-half inch thick with sharp coarse sand and rolled with a heavy metal roller until the grade is perfectly hard and smooth. Outside of the stringers *D* the grade must be continued to some point convenient for an outside water-course.

If gravel is convenient, the center and outside may be filled to within three or four inches of the top of the rails, and then after a coat of sand has covered the gravel about two inches deep sharp stones are used, as in the first instance, to make an impenetrable crust. Any suitable material may be used in making the bed—such as cobblestones, blocks of wood, or any other material as commonly used for this purpose—as I do not limit my invention to any particular form of con-

struction in this respect. Whatever materials are suited for the purpose or are most convenient for use may be used. The rails as soon as the steel plate is on can be used to transport the material for road building and filling, thus making a great saving in expense, while at the same time the center road-bed is made more solid by the use of teams in hauling.

Having thus described my invention, I claim—

1. The cross ties, the track timbers secured thereto, and the rails having raised edges, the edges being filled or backed with wood or other suitable material, the parts being combined and arranged to operate substantially as described.

2. In a road-way, the cross ties, and the metal rails secured thereto, combined with conduits P resting on the ties A, and ties D for carrying away the water, substantially as set forth.

3. In a road way, the cross ties, the metal rails applied thereto, and having raised edges with openings in the outer edges, combined with conduits which connect with the openings and carry off the water, substantially as specified.

4. A metal rail having a flat central portion and raised edges, the edges being perpendicular upon their inner and outer sides and rounding or beveled upon their tops, and provided

with slotted flanges, substantially as described.

5. In a road way, a metallic rail provided with raised edges having perpendicular sides and an inwardly inclined top and the rails provided with a lip or flange which is turned outward, substantially as shown and described.

6. In a road-way, the cross ties, the timbers D, secured to their outer ends and the timbers B, or metal stringers, combined with the rails C, having raised edges with openings therein, the timbers O, extending outward from the rails, and the metal conduits P, placed upon the timbers for carrying off the water, substantially as specified.

7. In a road-way, the cross ties, the timbers secured upon their outer ends, and the timbers upon which the rails are placed, combined with the rails having openings in their outer sides or edges, for the escape of water, substantially as described.

8. In a road-way, metallic tracks having raised edges, combined with a backing placed under or in the edges to prevent them from being crushed, substantially as specified.

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

JOHN O'DONNELL.

Witnesses:

EVERETT O'DONNELL,
WM. H. HILTS.