No. 818,954. PATENTED APR. 24, 1906.

O. GOTTSCHALK.

CONTINUOUS RAIL CROSSING FOR STREET RAILWAYS.

APPLICATION FILED AUG. 4, 1904.

Fig. 1.

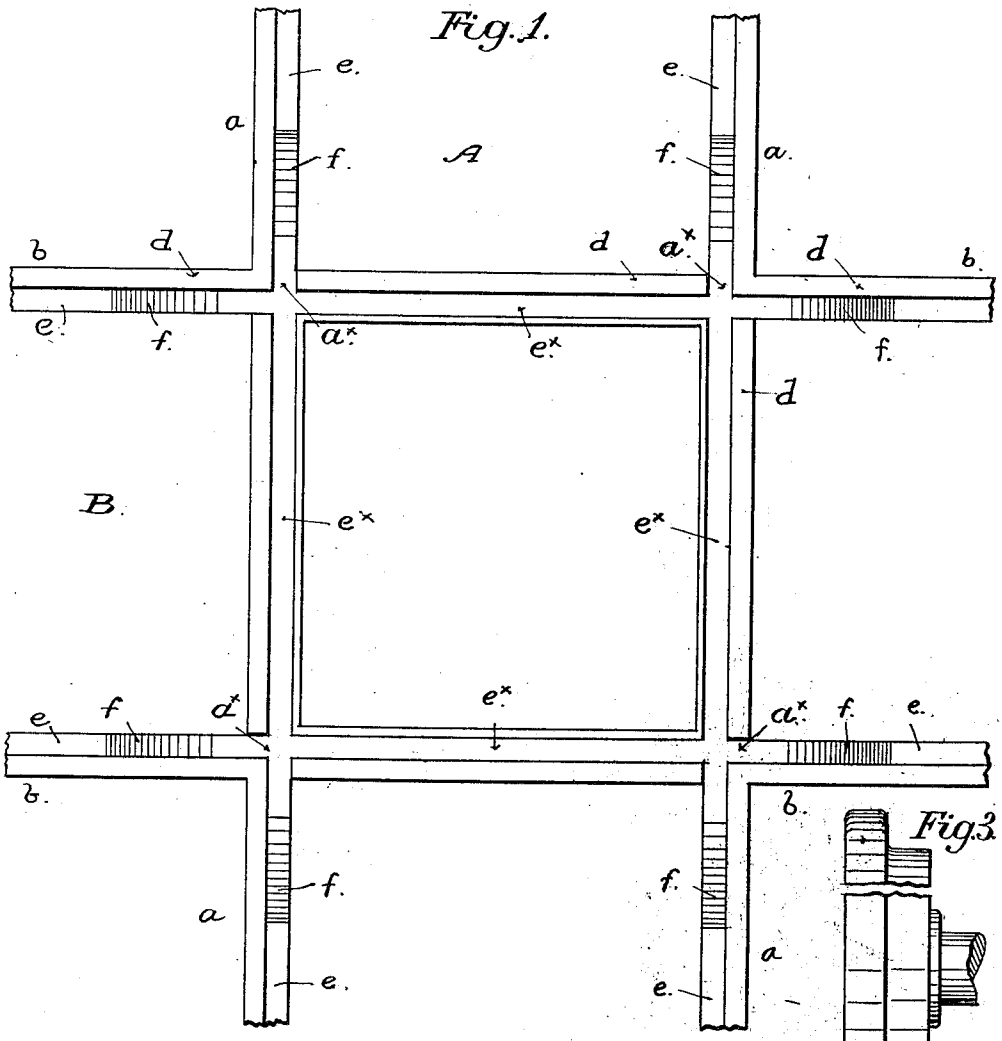


Fig. 3

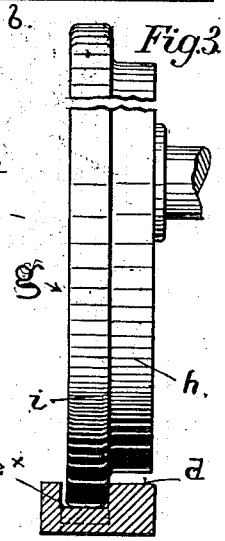
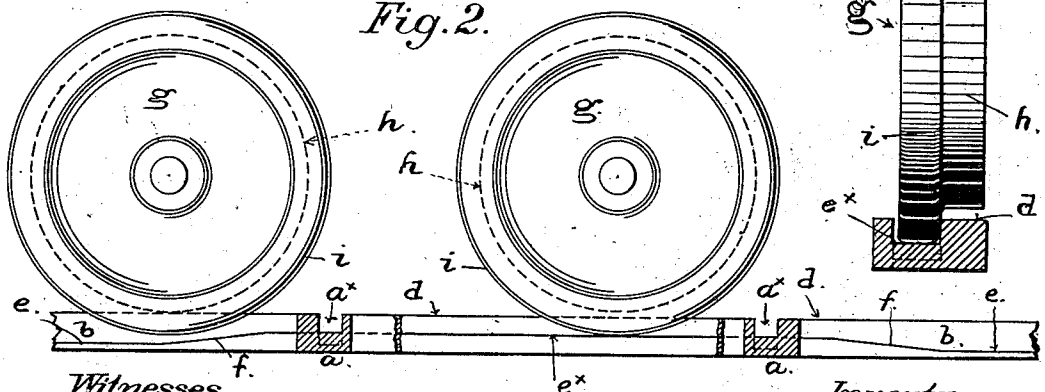


Fig. 2.



Witnesses.

E. A. Brandau

E. Gail

Inventor.

Otto Gottschalk,

by E. G. Brown

his attorneys.

UNITED STATES PATENT OFFICE.

OTTO GOTTSCHALK, OF SAN FRANCISCO, CALIFORNIA.

CONTINUOUS-RAIL CROSSING FOR STREET-RAILWAYS.

No. 818,954. Specification of Letters Patent. Patented April 24, 1906.

Application filed August 4, 1904. Serial No. 219,420.

To all whom it may concern:

Be it known that I, OTTO GOTTSCHALK, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented a new and useful Improvement in Continuous-Rail Crossings for Street-Railways, of which the following is a specification.

This invention relates to improvements made in street-railway crossings where the rails of one track intersecting those of another track, generally at right angles, are provided with breaks or openings for the flanges of the wheels to pass.

The invention comprises a novel construction and combination of car-wheel having in addition to its usual tread a supplemental tread of a different diameter and a track-rail having a principal bearing-surface with a break or opening at the point of intersection of the rail of the other track and a supplemental bearing-surface alongside of and bringing the break in the principal bearing-surface. The supplemental rim or tread is caused to run on the principal bearing-surface of the rail at the crossing-point and take the weight of the load off the principal tread on the rim by raising the level of the supplemental bearing-surface at the crossing-point. The principal tread on the wheel-rim being elevated by that means above the top of the principal bearing-surface of the rail will travel over the break or opening without touching. The supplemental tread of the rim and the supplemental bearing-surface of the rail thus form an efficient means of overcoming or removing the noise and jar caused by the car-wheel jumping over the breaks or openings in the rails as these crossings have heretofore been constructed.

The following description explains at length the nature of my said invention and the manner in which I proceed to construct and apply the same, the accompanying drawings being referred to therein by letters.

Figure 1 is a plan of the rails of two tracks in which the rails cross at right angles. Fig. 2 is a vertical cross-section on the line $x\,x$, Fig. 1, showing also two wheels of a car-truck in position on the crossing. Fig. 3 is a front elevation, on an enlarged scale, of one of the car-wheels, showing the improved construction of rim.

At the crossing-point where a rail a in one track A intersects the nearest rail b in the other track B and where the two rails are separated by the usual break or open space (indicated by the letter $a^{\times}$ in the drawings) the flanges of both rails are brought up nearly to the level of the top face or principal bearing-surface d of the rail. Starting from a point in advance of the break or opening $a^{\times}$ and from the common level of the flange, (indicated at e in the drawings,) the flange of the rail is increased in thickness for the full width of the crossing and to a point $e^{\times}$ beyond the opposite rail of the same track, so as to bring the top face of the flange that lies between those points $e\,e^{\times}$ nearly up to the level of the top face d of the rail itself. This elevated portion e^2 of the flange is joined to the main portion at each end beyond the crossing-points of the two tracks by inclines f, that give a gradual ascent from the unthickened portion of the rail-flange up to the elevated portion. At each break $a^{\times}$ in the rail therefore the rail-flange running alongside the gap will extend across and bridge the gap, while the elevated flange of the adjacent rail of the other track, running crosswise, will fill the gap widthwise and nearly up to the level of the rail. In the car-wheel g used with this crossing the rim is constructed with two treads $h\,i$ of different diameters arranged side by side and having about the same width of face, one of the faces constituting the main tread of the wheel, or that which runs on the top face of the rail, while the other face, which I have termed the "supplemental" tread, being arranged to run on the flange, or, rather, the elevated part or section of the rail-flange at and between the intersecting-points of the track-rails. The difference between the level of the top face of the rail and the surface of this elevated section of the rail-flange is so calculated and fixed with relation to the difference between the diameters of the stepped faces of the wheel-rim that when the wheel is passing over the crossing the supplemental tread i will travel on the elevated section e^2 of the rail-flange, while the main tread h will clear the top face of the rail and travel over it without touching. The weight of the load will therefore be transferred to and carried by the supplemental tread on the wheel-rim, and the main tread will pass over the breaks or openings at the intersecting-points of one rail with the other without making contact with the rail, and as the elevated section of the track-flange furnishes a continuous bearing-surface for the supplemental rim the wheel passes across the intersecting-point of

one rail with another and with little or no noise. The difference between the diameters of the stepped portions *h i* of the wheel-rim also gives the portion of greater diameter the function of a flange that serves to keep the wheel from leaving the rail and jumping the track not only at any point beyond the crossing, but especially at the crossing where the elevated section of the rail-flange is situated, because at the latter point the greater height of the top face of the rail above the level of the flange on which the rim *i* is traveling gives that rim sufficient hold sidewise to prevent the wheel from shifting laterally and leaving the flange.

The supplemental tread *i*, as well as the main tread *h*, is made as wide as practicable in order to furnish a bearing-surface that will run on the rail-flange and the rail proper without excessive wear or cutting of the surfaces that travel in contact with each other, and particularly with respect to the supplemental rim, which is required to take the full weight of the load while the crossing is being made. The width of the tread is equal, or nearly so, to the width of the face of the rail-flange it is required to travel on.

From the foregoing description the essential features of my invention will be seen to consist in the wheel having a stepped rim of two different diameters furnishing a main tread and a supplemental tread and either of which is adapted to give a broad bearing-face and in combination therewith crossing-rails having each a principal rail-surface level with and a continuation of the track-rail proper and a supplemental rail-surface which is formed by elevating the flange of the rail at the crossing-point and across the breaks or openings at the intersecting-point of one rail with another.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

In a railway-crossing, intersecting rails each having an elevated bearing or tread surface *d* continuous from end to end except at the intersections of the crossing rails where such elevated tread portions are severed to permit the passage of the flanged portions of the wheels, and the rails having also lower flanged portions *e* which the flanged portions of the wheels overhang, the said flanged portions of the rails being thickened and elevated at the crossing to constitute supplemental bearing-surfaces $e^{\times}$ that pass through the breaks of the elevated tread portions *d* of the intersecting rails, the elevated tread portions $e^{\times}$ of the rails being connected with the main flanged portions *e* thereof by the inclines *f*, substantially as set forth.

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

OTTO GOTTSCHALK.

Witnesses:
GEO. T. KNOX,
T. W. WITHOFT.