

(No Model.)

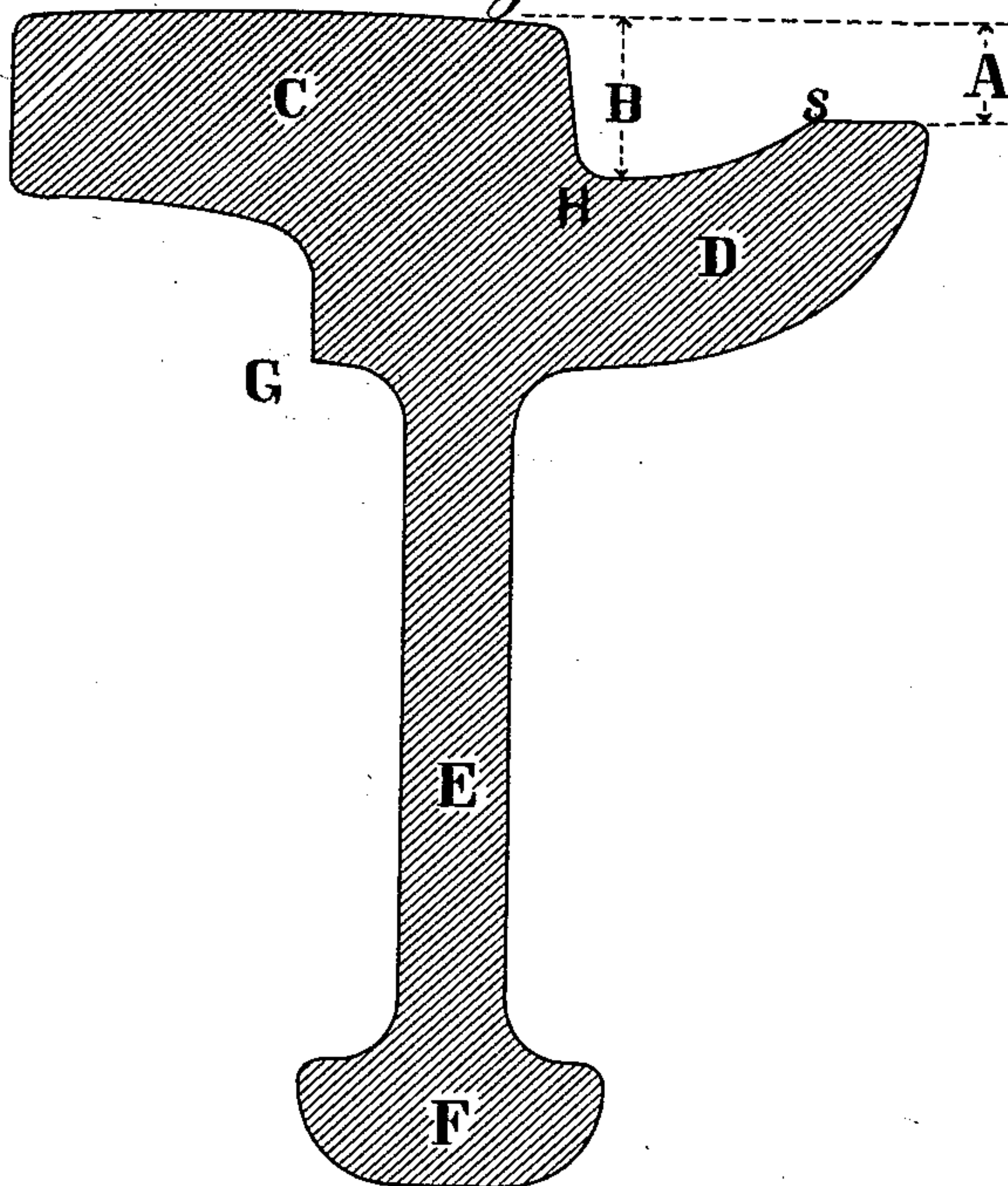
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GROOVED GIRDER RAIL FOR STREET CARS.

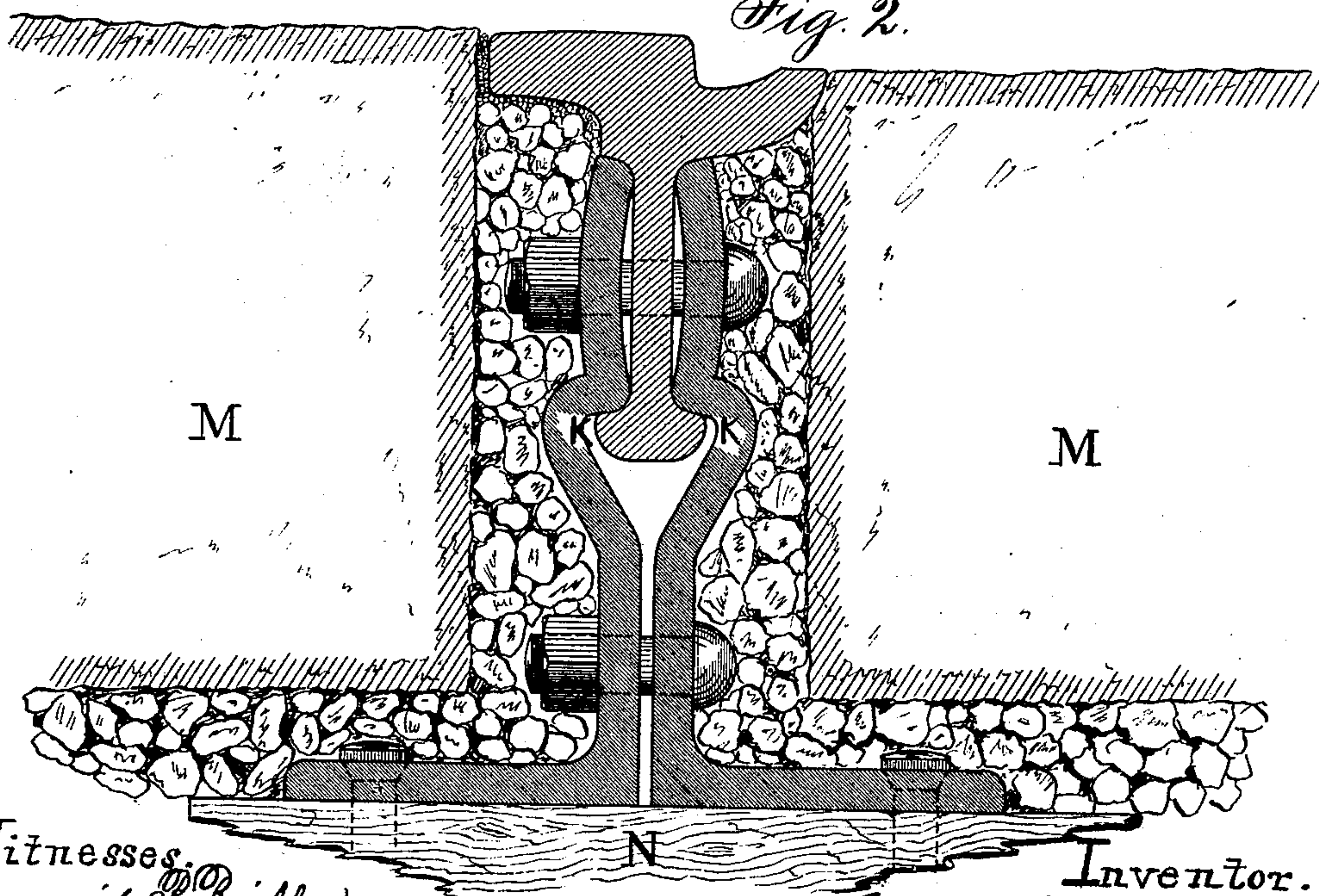
No. 366,507.

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*Fig. 1.*



*Fig. 2.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## GROOVED GIRDER-RAIL FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 366,507, dated July 12, 1887.

Application filed February 16, 1886. Serial No. 192,105. (No model.)

*To all whom it may concern:*

Be it known that I, CALVIN A. RICHARDS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Grooved Girder-Rail for Street-Cars, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to make a grooved girder-rail which, while presenting no obstruction to the passage of the wheels of ordinary street-vehicles, shall at the same time have such a groove shape of head as not to fill or choke up with dirt, snow, or ice in the groove sufficient to destroy the usefulness of the rail as a guide for the flanges of the car-wheels running upon the track.

The invention consists in the peculiar form given to the head and tram of such girder-rail, as hereinafter described, and particularly set forth in the claim.

In the accompanying drawings, Figure 1 shows the rail in cross-section. Fig. 2 shows the rail in cross-section, mounted on a chair, also in cross section, set within and surrounded by the street-paving.

In said figures the several parts are respectively indicated by letters, as follows: The whole head, or head and tram together, are indicated by the letters C D. At the point G the rail has a shoulder or offset under the head, C, proper. E is the web of the rail, and F its foot, beaded or filleted.

M M indicate the street paving-blocks, in which the rail and its chair are embedded above the cross-tie N, to which the chair is spiked. The chair is composed of two pieces bolted together and through the web of the rail; as seen in Fig. 2, the chair's two sides being offset over the foot of the rail, as seen at k k.

The advantages of this rail over other forms of rails and the purposes it accomplishes as a street-rail will now be set forth.

The ordinary girder-rail has a broad side tram, on which the street-vehicles can travel, its head being raised to a considerable height above said tram. Such height of head causes much difficulty to wagons in turning off the tram, the head binding the wheels in such at-

tempt. This trouble has been obviated by a form of rail known as the "English rail," which rail is rendered entirely non-obstructive to street-vehicles by making it with a flat head and narrow groove therein, so narrow as to permit only the passage of the flanges of car-wheels therein. This form of rail, however, is only adapted for use in perfect and well-kept-up pavements. Its trial in this country has not been found satisfactory, owing to the generally defective state of the paving and the consequent exposure of head by the settling of the paving. In such case the smooth head offers no guide to wagons running on the same, the wheels of which quickly work into the grooves or channels caused by the sinking or settling of the paving, and thus further increase the exposure of the rail. Its groove becomes quickly clogged and the paving, by irregular settling, causes further depression around the rail, due to the grooving or cutting down of the same by the wheels of the street-vehicles guided in the same ruts by the thus exposed rail.

In the rail forming the subject of this invention the defects above mentioned are obviated, as follows: The side tram, D, is thrown down below the level of the head C the distance marked A, Fig. 1, which distance is sufficient to guard a wagon-wheel using the rail, and so save it from slipping off to the adjacent pavement and cutting down the same should it have settled. At the same time said distance A is not such that the protrusion or elevation of the head is obstructive to the wheels of wagons in the attempt to turn off the track. The distance A is preferably about three-eighths of an inch, or about three-sixteenths to one-quarter of an inch less than the depth of flange of the car-wheel, so that only the sharp point or edge of the wheel-flange extends below the line of the top of said groove. The side tram, D, is also grooved, which groove, the pavement being laid level with the tram, it is true, may, by accumulations of dirt, become entirely filled, yet such filling will not hamper or obstruct the passage of the car or tend to derail it, for in such case there will still remain enough exposure or ele-



vation of the head of the rail to safely guide the wheel-flanges of the cars; and, moreover, the extreme and sharp peripheries of the flanges, extending but little below the filled  
5 surface of the groove, easily and without adding to the friction of the wheel-passage cut through the small amount of filling necessary to bring the tread of the wheels to a bearing upon the head of the rail. Should said groove  
10 even become filled with ice or frozen snow, and thus for a time resist the settling down of the wheel-flanges into such groove, there still remains the advantage, due to the elevated head, of safely holding the car to the track  
15 until the groove is cleared out or a thaw sets in. The groove is also, it will be observed, of such shape as will permit of the easy outturn of even the smallest or narrowest tired buggy-wheel that may happen to enter it, for by the  
20 gradual slope of the groove from the point H to the point S such wheel would turn on the bottom of the whole groove as a pivot, and thus partially lift itself out by easily mounting the point S before meeting the obstruction  
25 of the head C. The side tram, D, is of narrow proportions, and by paving only up to the level of this tram the paving is rendered non-obstructive to the wheels of passing street-vehicles, and said wheels may thus overlap said  
30 tram and paving without any obstruction from the paving. Where a wide tram and high head are used, the paving is set level with the elevated head of the rail, thus providing a wide groove on top of the tram between the  
35 head and the paving sufficient to permit of the

passage therein of the widest wagon-wheel tire; but with the rail forming the subject of this invention the small depression of the street-paving below the head of the rail to only the level of the raised top of the side tram—  
40 only about three-eighths of an inch—cannot be urged as an objection, as would necessarily be the case were the surface of the street depressed to the whole depth of the head of the rail. Under the head C the rail is braced  
45 by the shoulder G, and by the use of which splice-bars of equal width may be employed on each side of the rail.

The rails shown in the drawings are devoid of lower flanges, being merely filleted at foot,  
50 and in Fig. 2 secured to a chair clamping said fillets at *k k*; but while such form of foot is preferable, I do not limit myself to any special form of foot for the rail, nor do I make any claim herein to said chair.  
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Having thus fully described my improvement in girder street-rails as of my invention, I claim—

A side-bearing girder street-rail provided with a deep vertical central web having a filleted bead on both sides of the lower portion  
60 or foot of said web, and with a partially upturned side tram the upper level of which is lower than the level of the head of the rail, substantially as and for the purposes set forth.  
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Witnesses:

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