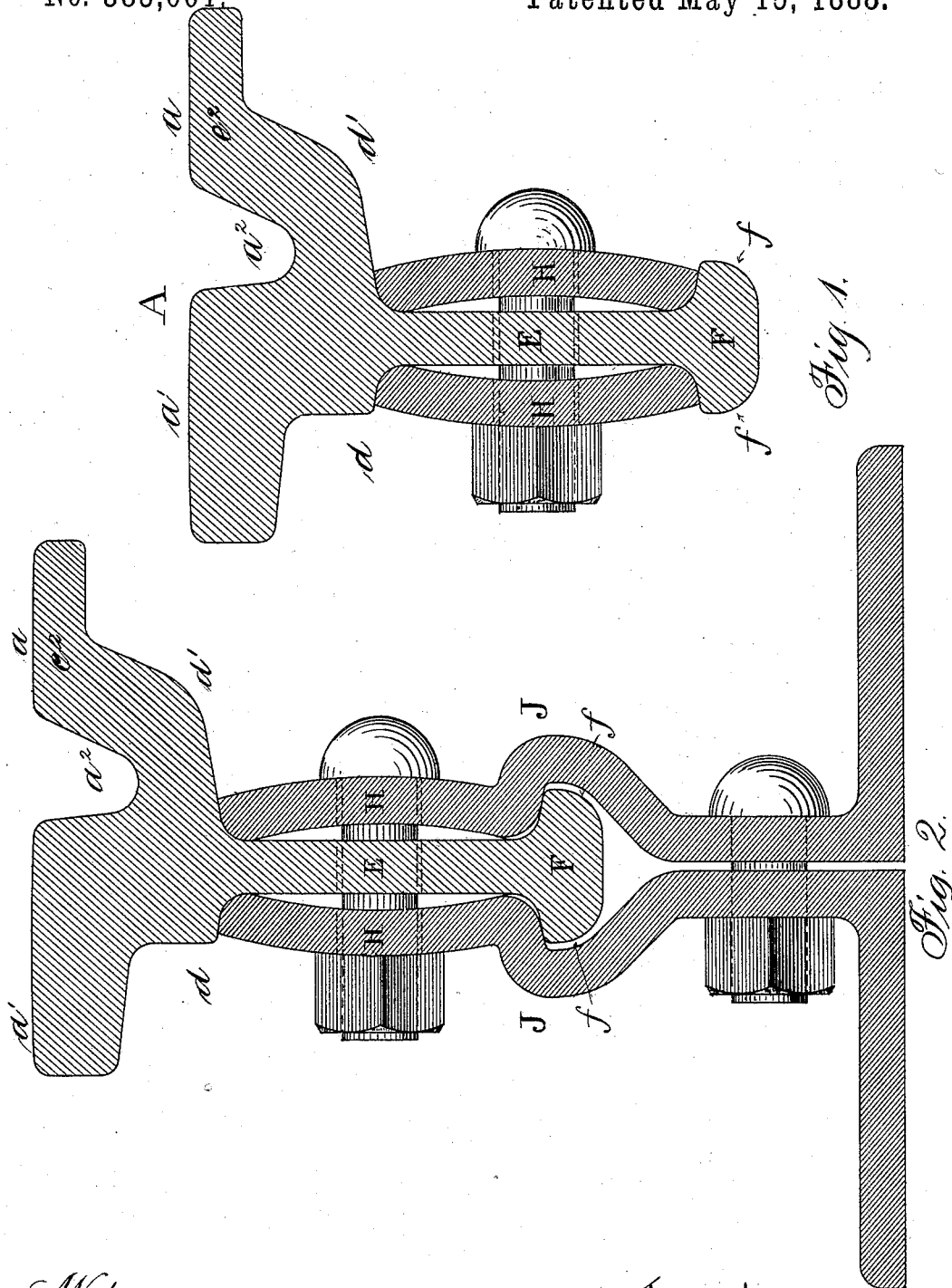


(No Model.)

A. J. MOXHAM.  
GROOVED GIRDER RAIL.

No. 383,001.

Patented May 15, 1888.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## GROOVED GIRDER-RAIL.

SPECIFICATION forming part of Letters Patent No. 383,001, dated May 15, 1888.

Application filed November 20, 1885. Serial No. 183,406. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR J. MOXHAM, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Grooved Girder-Rails for Street-Car Tracks, which improvement or invention is fully set forth and illustrated in the following specification and accompanying drawings.

10 The object of this invention is to make a street-car rail which, while inviting street-vehicle traffic upon the track on which it is laid, shall at the same time exclude the tires of the vehicles engaged in such traffic from entering the grooves in such rails.

15 The invention will first be described in connection with the accompanying drawings, and then be specifically set forth in the claim.

20 In said drawings, Figure 1 is a transverse section of a grooved girder-rail, showing ordinary splice-bars, also in similar section, and bolted thereto for uniting such rails at their joints in track. Fig. 2 is a similar section showing such grooved rail secured in track by 25 a specially-formed chair, also in cross-section.

In said figures the several parts of the rail are indicated by letters as follows:

A indicates the head of the rail; E, its web, and F the stub at the bottom of its web.

30 The letter  $a'$  indicates that portion of the head of the rail which is used by both the cars and the street-vehicles, and  $a$  that portion of the head that is used by the street-vehicles only. In said head is the groove  $a^2$ , which, 35 while too small or narrow to permit the tires of the street-vehicles to enter, is yet sufficient in width to permit of the passage therein of the flanges of the car-wheels.

40 The web E is joined to the head of the rail by the metal distributed as at  $d$   $d'$ , by which the head is braced or strengthened on either side of the groove  $a^2$ , the car-wheel running only on the side  $a'$ . The stub F of the web E is rapidly inclined at the points  $f$   $f'$ , as 45 shown in the drawings.

The web E in Fig. 2 is bolted to the chair J J through its portion H H, as shown in the drawings, the two sides J J being bolted together below the stub F.

50 In Fig. 1 splice-bars H H are shown bolted to the web E, no kind of a chair being shown.

It will be thus observed that this rail has its

web central or nearly in the center, and the under side of its head on each side of said web of similar shape, with a narrow groove near 55 the center of the head, and that part of the head  $e^2$  on which the car-wheels do not run of lighter proportion than the rest.

In all grooved rails it is purposed to have the head of the rail flush with the street-paving, so as to offer no obstruction to the passage of street-vehicles in any direction. A 60 grooved rail merely, therefore, is not new; but in the customary form of such rail the head is of strong and durable proportion on 65 the side supporting the street-car traffic, while on the other side, exclusively supporting the street-vehicle traffic, the head ends in a mere upturned flange flush or level with the other side, or car-wheel side, of the head. In many 70 places in large cities street-car tracks have been and are constantly being laid in thoroughfares where the rails must be subjected to an excessive amount of street-traffic; hence the need of providing a rail suited to the consequent excessive wear from such service. 75

In the rail herein described and illustrated it will be observed that each side of the head alike provides a passage-way for street-vehicles, should such vehicles run upon the track, 80 which in the poorer class of paved streets they are likely to do to a greater extent than otherwise. The whole head of this rail, therefore, supports both the traffic of street-vehicles and that of the street-car wheels; but with the 85 rail having the small upturned flange above mentioned in common use the tendency of the street-vehicles is all to run upon the side of the head of the rail which supports the cars. As the head of the rail forming the subject of 90 this invention has both sides of its head of a considerable and measurable breadth, each of said sides equally invites street-traffic, and so a more serviceable rail is made where such traffic is heavy, which thus at the same time 95 tends to more nearly equalize the wear upon the two sides of its head.

In all car-rails it is an object to so proportion them that when worn out for traction purposes there will be left but a minimum material for waste. In grooved rails the car-wheels 100 must always run on one side only of the head of each rail, and so even after the street-vehicle traffic has been equally distributed on

each side of the rail an excess of wearing action will always remain on the head-side proper or car-wheel side of the rail.

With the rail forming the subject of this invention, in order to secure the result of uniform wearing away on each side, and so simultaneously that there shall remain the least waste material when the rail is past further service in the track, a heavier mass of metal is concentrated on the car-wheel side of the rail. This addition of metal may be made entirely on the under side of the head, keeping the entire top of the head flush or level; or it can, if desired, be divided between the upper and lower sides of this part of the head, putting as much on the upper side as may be permissible without making the same obstructive to street-traffic, and the rest of the metal on the lower side of the head. By such distribution of metal in such form of head the whole head will wear through nearly simultaneously and with a minimum of waste of material.

The stub F at the lower end of the web, in-

clining rapidly away at the points *ff*, permits of the use of a chair which, while embracing said stub over its top edges, is of such form as to secure ample strength for all purposes of a chair.

The chair shown in the drawings forms no part of this invention.

Having thus fully described my said improvement in grooved girder rails, as of my invention I claim—

A street car girder-rail of the form substantially as illustrated in the accompanying drawings, consisting of a vertical central web terminating at bottom in a double-shouldered stub or bead, as F, and provided with a head having a shoulder, *d*, a groove, *a*<sup>2</sup>, and an overhanging lip, *e*<sup>2</sup>, substantially as and for the purposes set forth.

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