

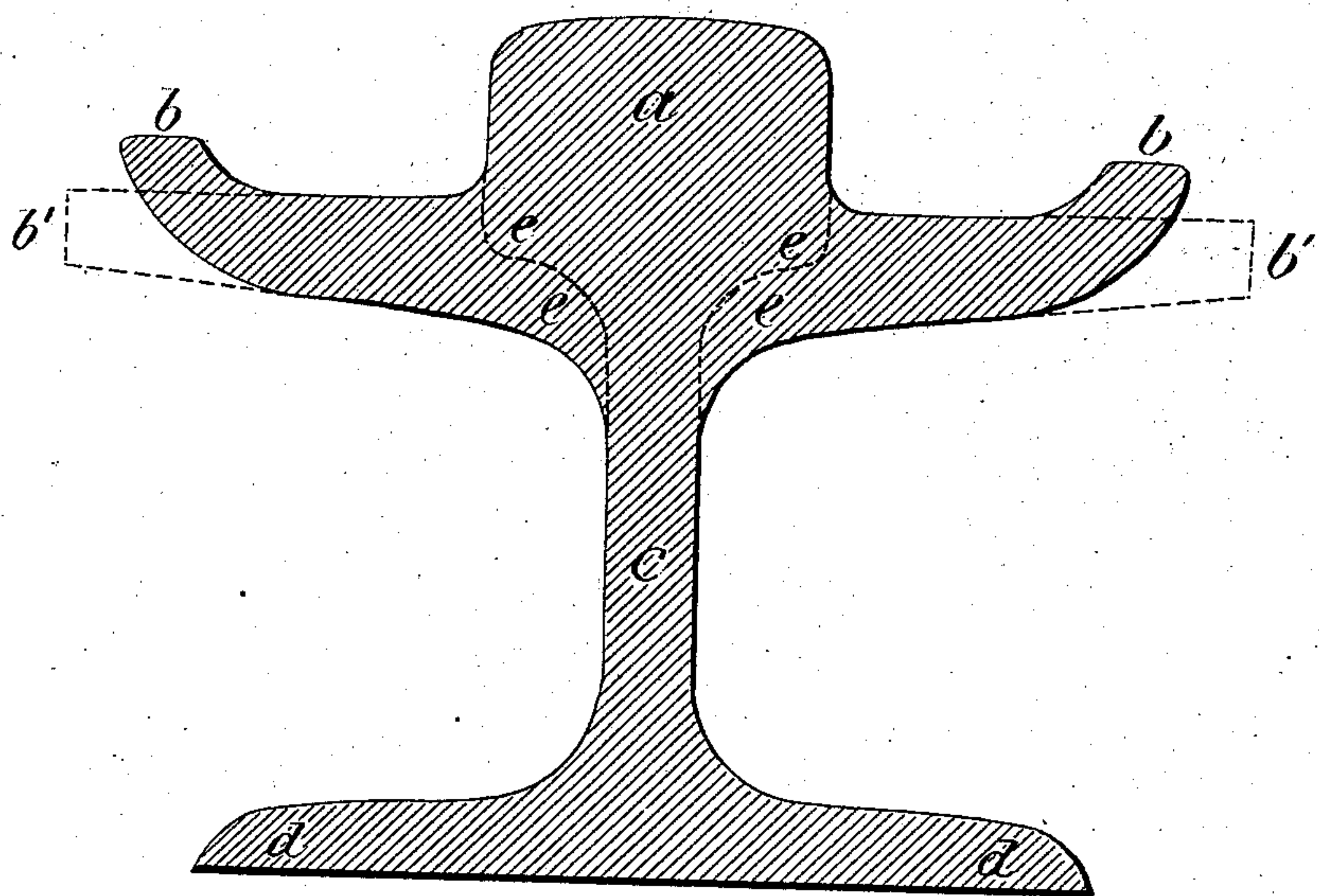
(No Model.)

T. L. JOHNSON.

RAILROAD T-RAIL.

No. 292,655.

Patented Jan. 29, 1884.



Witnesses:
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UNITED STATES PATENT OFFICE.

TOM L. JOHNSON, OF INDIANAPOLIS, INDIANA.

RAILROAD T-RAIL.

SPECIFICATION forming part of Letters Patent No. 292,655, dated January 29, 1884.

Application filed February 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, TOM L. JOHNSON, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful
5 Improvement in T-Rails for Steam-Railroad Traffic in Cities, which improvement is fully set forth and illustrated in the following specification and accompanying drawing.

The object of this invention is to produce a
10 double-flanged T-rail having the strength and proportion of the ordinary T-rail, but with flanges of certain forms on either side, by which additions a rail of the strength and proportion aforesaid is much better adapted for
15 use in the streets of a city, for though more particularly designed for the use of steam-railroads running through the streets of cities, said rail is also specially adapted to be used with equal advantage by city street-cars.

Referring to the drawing, which is a cross-section of my rail, *a* indicates the head of the rail. *b' b'* indicate the flanges as the same appear when the rail is first rolled. *b b* indicate the side flanges when the rail has had the
25 side flanges turned upward. *c* indicates the web, and *d d* indicate the lower flanges of the rail. *e e e e* indicate the head of an ordinary T-rail, and also show plainly the form, location, and proportion of the side flanges added
30 thereto.

It will be seen from the drawing that this rail is of an ordinary T-rail form, with the addition of two side flanges. In rolling this rail the flanges can be left as shown by the dotted lines *b' b'*, and afterward turned up and bent over by special machinery, or, by giving the rail one pass while in the vertical position shown in the drawing, it is possible to properly bend up the extreme ends of the flanges.
40 It will be necessary to put "draft" enough in the passage of the rail through the forming-grooves of the rolls on its head *a* and lower flange, *d d*, to hold or steady the rail while the flanges *b b* are being bent. This could be
45 done at small expense, and immediately after the process of rolling. However, by putting the bending-groove in the same rolls as those which are used for shaping the rail the curbing and rolling would be virtually but one

process, effected complete at the same heating.

It is well known that in the laying of a T-rail of ordinary section in the streets of a city many disadvantages are incurred. In the first place, such rail presents a form that
55 is not well adapted for bonding with, and hence keeping in repair the ballast and roadway immediately in contact with it; hence it is generally found that the ordinary T-rail, when so laid, quickly causes that part of the
60 street in contact with it to become grooved and worn.

It will be seen that in the rail forming the subject of this invention the addition of the two side flanges forms a pocket on either side
65 of the rail of such size and shape that the ballast, once entering the same, is not free to flow out again. By bending the lower side of said flanges upward, as at *b b*, a curve is given to the entrance to this pocket which facilitates the flow of the ballast into and its occupancy of the same; hence, the ballast being
70 therein retained, the rail is bonded thoroughly with the street and the said street kept in good condition. A second disadvantage in
75 the use of the ordinary form of T-rail, when laid in the streets of a city, is that, the heads of the rails being too narrow to act as passage-ways for the wheels of ordinary vehicles, the wheels of such vehicles which come in
80 contact therewith will find a natural passage-way along the sides thereof, being to a great extent guided by the rail. This wheel-passage quickly wears ruts or grooves in the streets, to their serious injury or destruction.
85 Furthermore, if during its passage across said ordinary T-rail a wagon should slip, as wagons frequently do, sidewise, such friction against and over the part of the street immediately adjacent to the rail accelerates this
90 wear. It will be seen that in the rail herein described such wear is prevented by means of the flanges on its either side. There is width enough in these side flanges to act as passage-ways for the wheels of ordinary wagons or street-vehicles, and thus prevent the
95 wear of the street on either side of the rail by either rolling friction or friction caused by the

slippage sidewise above mentioned. A third disadvantage attending the use of the ordinary form of T-rail when laid in the streets of a city is that the solid head of such rail presents an obstruction to the passage of wagons and other vehicles over the same not only at angles more or less acute thereto but also at right angles, particularly where the streets have become more or less grooved or worn adjacent to the rail, and its head therefore more elevated or exposed, whereas the two side flanges in the rail forming the subject of this invention present each a step or starting-point for such crossing at any angle from either side. The level of this step or starting-point is, therefore, by the curving upward of the extreme or exposed ends of the side flanges, permanently preserved nearer to the level of the head of said rail, consequently the passage of vehicles across the head of either rail at any angle is thereby greatly facilitated.

It is known to be of advantage to sometimes turn a T-rail when the head has become worn more on one side than on the other. This can be done to every advantage when the addition of the two flanges herein described has been effected. It is further known to be somewhat difficult, with the ordinary form of street-rail having a flange on one side only, for a wagon to get at once into and on this flange when it is desired to use the same as a passage-way. It is frequently the case in attempting to drive quickly upon such a track that the wheels of the wagon will run not only into but over these flanges to and upon the street adjacent instead of remaining in and on the flanges, as desired. When this happens, it becomes necessary for a vehicle to make a wide sweep in order to return to the track at an angle to suit the head—that is to say, at an angle which will enable the wheels to mount over the head without slipping against the same, for it is difficult to surmount the heads of all rails laid in streets at an angle closely approaching the direction of the rail without straining the axle or warping the wheel of the vehicle by the friction or slippage that occurs under these circumstances, whereas by the use of the double flange herein described it does not, under these circumstances, become necessary to remount the head to secure a passage-way on the flanges, as the wheels of the vehicle can use alternately the inside flange of one rail and the outside flange of the other, and thus do away with both the trouble expended and time lost in the detour, and also the risk of straining the axle or warping the wheel. The gage of the wheels of an ordinary wagon is not, as in railroad practice, a fixed thing, and in any given locality this gage is largely determined by the inducements offered by local circumstances. It would thus happen that where the use of these rails became general the gage of the ordinary vehicles would be quickly conformed to avail of the advantages thus offered. These double flanges offer

the further advantage that when two vehicles approach on the same track they can pass each other without, in either case, mounting the head of a rail. It would become, in such cases, the practice to adopt the rule of using always the right-hand flanges—that is to say, the flanges at the right-hand side of the direction of travel. The limit of divergence here allowed without mounting the head of a rail would be limited only by the width between the heads of the two rails in track, which width would more than suffice for clear passage-way between the passing wagons, for they could, by running slightly to either side, pass each other and regain their places on the flanges without coming in contact with the heads of the rails.

It is further obvious that in retaining the general form and proportion of a T-rail the addition of a double flange secures the proper protection of the street or ballast on both sides of the rail. The width of the side of the head of a T-rail overlapping the web does not present a pocket sufficiently capacious and of proper form for securely bonding the rail with the adjacent ballast of the street. It is true that this object might be effected by using a flange on one side and prolonging the head upon the other side of the rail; but this could only be done by sacrificing the advantages of the form of a T-rail, now perfected by large practice and experience—advantages of particular value for the purposes of steam traffic, and of much value for street-car traffic.

I am aware that flat rails have been used for purposes of street traffic with a central head and side flanges, and such, as of my invention, I do not claim. I am also aware that rails of special construction with heads located on one side, and with one flange, in combination with a T-web and foot, have been used, and I do not claim such as of my invention; but,

Having thus fully described the form, uses, and purposes of my said improvement, as of my invention, I claim—

1. As a new article of manufacture, a rail whose head, web, and foot are substantially of the form and proportion of the ordinary T-rail, provided with two side flanges integral with the body of said head and formed therefrom into side tracks for ordinary wheels of street-vehicles, as and for the purposes set forth.

2. A T-rail having a central head provided with side flanges integral with the body of said head, and adapted for use as tracks for the wheels of ordinary street-vehicles, the extremities of said flanges being curved, so as to facilitate the inflow of street-ballast on either side into pockets sufficiently capacious to bond said rail with the adjacent street material, substantially as set forth.

3. A T-rail having a flange on each side of its head integral with the body of said head,

and formed into two side tracks whose ex-
tremities are curved upward for street-ve-
hicles, as described, whereby great facility
is secured for the passage of such vehicles
5 across such rails at any angle thereto when
laid in track, and wear of street adjacent to
said rails largely prevented, substantially as
set forth.

In testimony whereof I sign this specifica-
tion, in the presence of two witnesses, this 6th 10
day of February, 1883.

TOM L. JOHNSON.

Witnesses:

JNO. CROWELL, Jr.,
A. J. MOXHAM.