April 12, 1932. J. B. FORKER, JR 1,853,342

TWIN TREAD RAIL

Filed Feb. 11, 1931

FIG. 1.

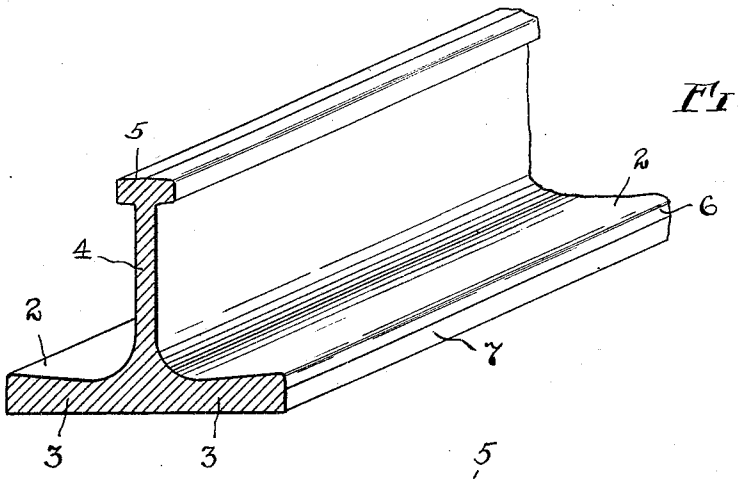
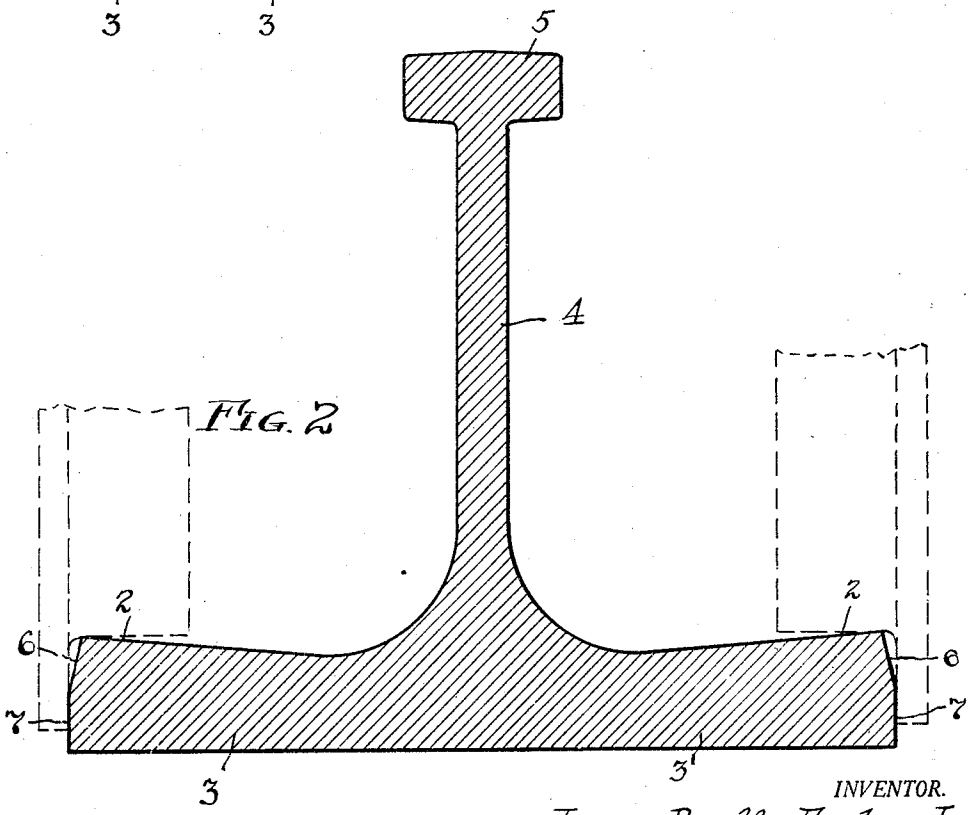


FIG. 2.



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UNITED STATES PATENT OFFICE

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TWIN TREAD RAIL

Application filed February 11, 1931. Serial No. 514,947.

Traction rails in service show peculiar deformative tendencies, some known and some not so well known. The wheel-receiving portions in general exhibit a condition of molecular flowage, the surface portions of the metal undergoing progressive movement from the peening action of the wheels, there being in effect a sort of rolling-mill action upon the portions of metal concerned. Such portions are elongated, both in the longitudinal and transverse directions, and in effect the metal-molecules are in a state of gradual flow most pronounced at the wheel-receiving surface and tapering off therefrom such that the more remote portions of the rail are correspondingly less affected, and the most remote portions practically escape. Such differential rolling-action in the rail, accentuated at the wheel-receiving surface develops augmented dimensions at the wheel-receiving surfaces as compared with the progressively less-affected metal mass. Particularly, in the case of rails having twin wheel-receiving tread surfaces, such peening action develops deformation in the rail, and it is found that such rails develop a bowing deformation transversely, the tread surfaces being hammered down and outwardly, the molecular movement being greatest at the wheel-receiving faces, while the under-face is substantially unchanged, and the transverse dimension at the upper surface thus becomes greatly increased over the transverse dimension of the lower surface, and a corresponding curling occurs. As a result of study and investigation of such defects, I have now found, however, that the phenomenon of differential molecular flowage in such rail structures may be turned to advantage, controlling its own results, by means of the principle concerned in the present invention.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:—

Fig. 1 is an isometric view of a portion of a rail in accordance with the present invention; and Fig. 2 is an enlarged transverse section.

Referring more particularly to the drawings, there is shown a rail having wheel-receiving surfaces 2 on flange-portions 3. For ordinary usages, it is generally desirable to provide also an upstanding web 4. Preferably, although not necessary, such web may be surmounted by a head 5, of convenient section and contour. The outer faces of the flanges 3 have their upper edges 6 retreating inwardly or cut back, as compared with the dimension at the lower portion 7 of the flange-edge. According to particular duties in view, the amount of such cut-back may vary, but an amount approximating one-sixteenth of an inch in seven-thirty-seconds of an inch for substantially the upper half 6 of the outer edge is most usually desirable. The lower half 7 of the outer edge may then be substantially vertical, in order to give a well proportioned body. The precise contour of such cut-back portion may vary, being more or less rounded, but in general a smooth bevel is preferable.

The tread surfaces 2 furthermore slope inwardly from their highest point adjacent the outer edge, and preferably such slope may run smoothly to the base of the web where such is present. The amount of inward slope may vary somewhat, depending upon the particular duty in view. A proportioning on the order of a slope approximating one-fourth of an inch in three and one-fourth inches is in general desirable for most usages.

Such a rail structure is thus seen to present in its transverse-sectional aspects, twin-treads sloping inwardly, and outer flange-faces whose upper edge retreats or is cut back. Preferably, the plane of the wheel treads *w* is substantially horizontal transversely of the rail, and as initially put into service a point contact is had. When now metal flowage tendency occurs from the peening action of the wheels on the tread por-

tions, this is turned to advantage, since such flowage as occurs is distributively controlled in a form to develop a hard cold-rolled line contact surface, superior to the normal steel in wearing qualities, and such rails are enabled to stand up under heavy usage correspondingly more effectively than rails of conventional type heretofore.

Rails in accordance with the present invention may be applied to various situations and conditions where a twin tread is desired, whether on the ground or in an elevated position, the construction being particularly favorable for such usages as crane-tracks and like elevated structures subject to heavy duty.

Other modes of applying the principle of the invention may be applied, change being made as regards the details described, provided the means stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A rail of the character described, having its flanges progressively thickened toward the outer edges and the upper outer flange-edges cut back.

2. A rail of the character described, having flanges progressively thickened toward the outer edges and the tread-surfaces sloping inwardly.

3. A rail of the character described, having its flanges progressively thickened toward the outer edges and the upper outer flange-edges cut back and tread surfaces thence sloping inwardly.

4. A rail of the character described, having its flanges progressively thickened toward the outer edges and the outer flange-surfaces retreating in substantially the upper half thereof, and having tread surfaces sloping inwardly.

5. A rail of the character described, having its flanges progressively thickened toward the outer edges and the upper outer flange-edges cut back approximately one-sixteenth of an inch at the top.

6. A rail of the character described, having flanges progressively thickened toward the outer edges and the tread surfaces sloping inwardly approximately one-fourth of an inch in three and one-fourth inches.

7. A rail of the character described, having its flanges progressively thickened toward the outer edges and the outer flange-surfaces retreating in substantially the upper half approximately one-sixteenth of an inch in seven-thirty-seconds of an inch, and tread surfaces sloping inwardly approximately one-fourth of an inch in three and one-fourth inches.

8. A rail having tread surfaces sloping inwardly, and wheels having tread surfaces substantially horizontal transversely thereof.

9. A rail having its upper outer flange-edges cut back and tread surfaces sloping inwardly, and wheels having tread surfaces substantially horizontal transversely thereof.

Signed by me this 9th day of February, 1931.

JAMES BENTLY FORKER, JR.