

(No. Model.)

H. C. RYDING.  
CAMBERING MACHINE.

No. 531,448.

Patented Dec. 25, 1894.

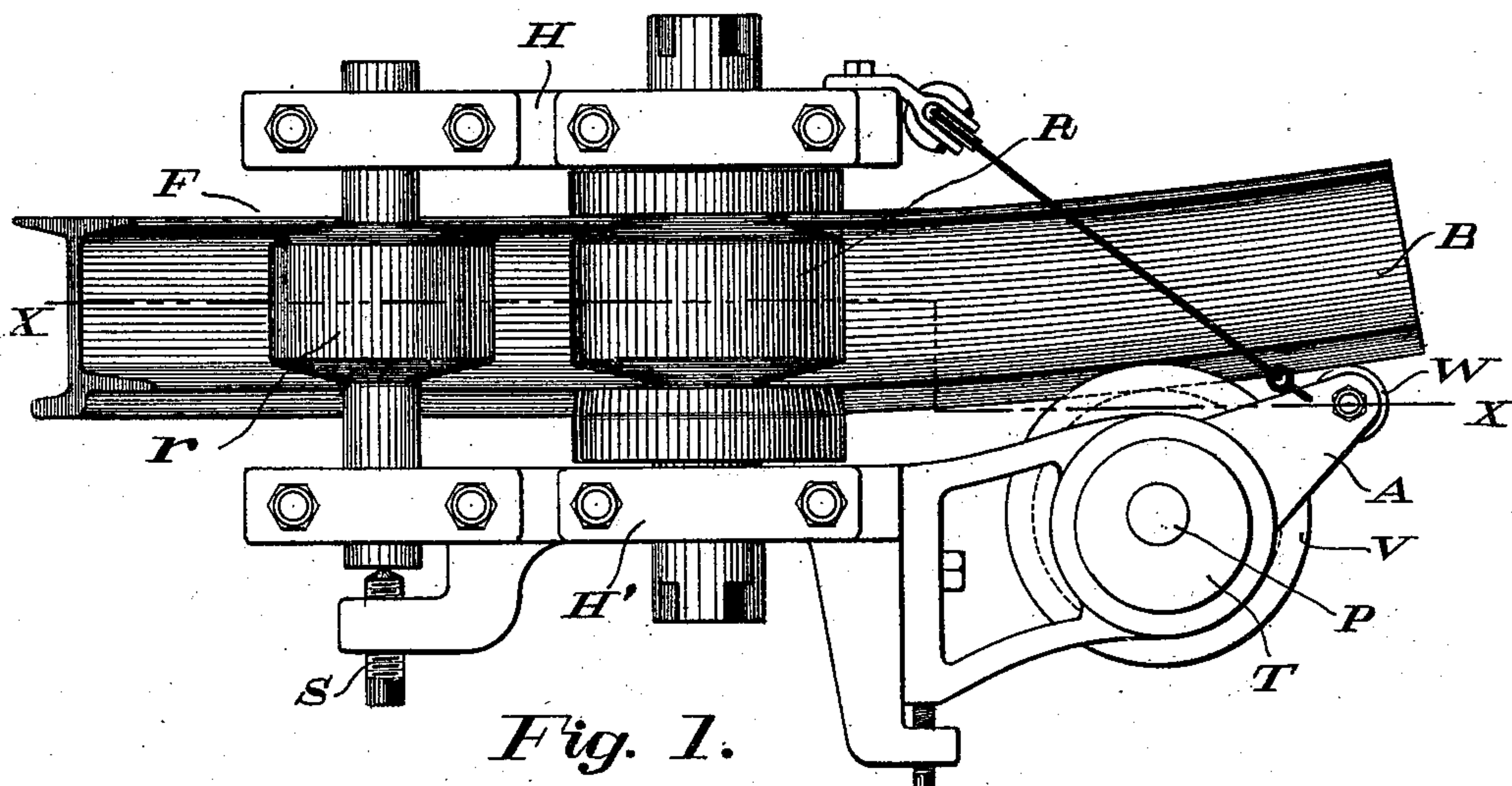


Fig. 1.

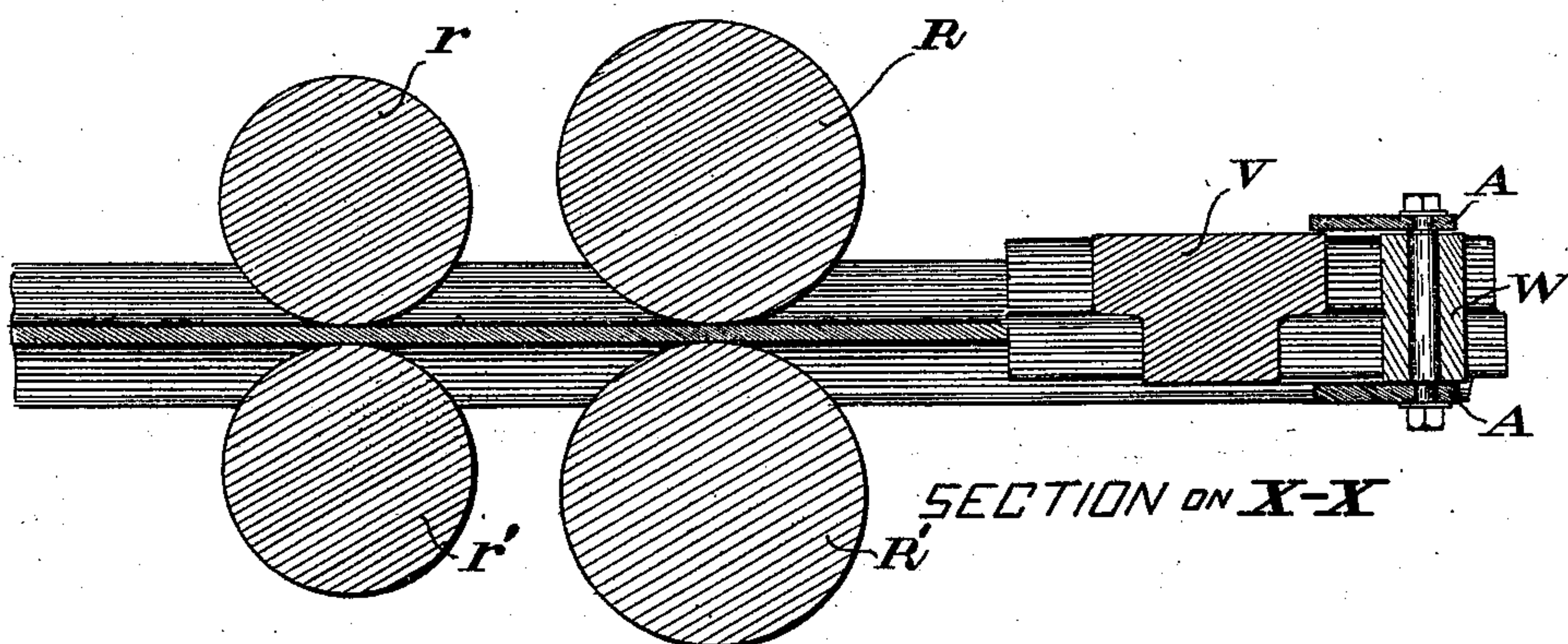


Fig. 2.

WITNESSES:

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## CAMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,448, dated December 25, 1894.

Application filed July 21, 1894. Serial No. 518,234. (No model.)

*To all whom it may concern:*

Be it known that I, HERBERT C. RYDING, of Johnstown, county of Cambria, State of Pennsylvania, have invented a new and useful Improvement in Cambering-Machines, of which the following specification is a true and exact description, due reference being had to the accompanying drawings.

My invention relates specially to a machine for cambering railroad rails in the process of manufacture, and I will so describe it though it may be otherwise used.

In the manufacture of railroad rails it is customary to curve or camber the hot rail after it has been rolled, in order to counteract the tendency to bow and curve in cooling. To effect this hot cambering is the object of my machine.

There are several types of cambering machines. The type to which mine belongs consists essentially of a pair of horizontal driven rolls between which the rail passes, and two vertical rolls one on each side of the horizontal rolls and so set out of line with the pass in the horizontal rolls as to force the rail in a curved direction. My invention consists in substituting for one of these vertical rolls a pair of horizontal rolls as I will describe.

In the drawings Figure 1 represents a top view of a cambering machine constructed in accordance with my invention, and Fig. 2 represents a vertical section of Fig. 1 on line X X.

H, H' are the housings and R R' a pair of rolls mounted therein. These rolls are of such configuration that they will grasp, without distorting, the rail or bar B to be cambered, and they are connected with any suitable power by the usual couplings. Mounted on the same housing and immediately in front of the rolls R, R' is the pair of rolls r, r'. These rolls run loose, that is, they are operated by the friction of the rail as it is drawn between them by the rolls R, R'. They are also shaped so as to grasp the rail but they need not be exactly the same configuration as R and R'. Their function is to support the rail horizontally, and to that end they are so formed that they engage the flange F of rail B. It might be necessary in some cases to form them similar to the other rolls R, R'; the shaping of these several rolls being dependent upon the shape

of rail or bar to be cambered. On the opposite side of the main rolls is the vertical roll V. The pivot P of this roll is eccentrically mounted in the trunnion T. To this trunnion, or rather trunnions, there being of course one above and one below, are secured the arms A carrying on their ends the little roller or wheel W.

Normally the arms A stand directly across the path of a rail issuing from rolls R, R' and in this position the roll V is out of the path of the rail as it issues straight from rolls R, R'. The end of the rail meeting the arms A or roll W push them around out of its path and this, revolving the trunnions T, brings the roll V into action against the rail and forces it out of a straight line. Instead of this adjustable roll V a fixed one may be used.

I do not herein claim the above described manner of mounting the roll V as I have already claimed it in Patent No. 520,865 heretofore granted to me.

It will now be seen that the function of rolls r, r' is to deliver the rail in a straight line to the rolls R, R' and prevent the roll V from forcing the rail in a diagonal position therein instead of bending it. The screws S bearing against the rolls r, r' afford means for accurately adjusting the rolls so as to deliver the rail as desired. It is immaterial which pair of rolls be the driven ones, as the power could be as well applied to the first as the second set.

In those machines in which a single vertical roll takes the place of the rolls r r', this single roll has a very injurious effect upon the rail due to the fact that it must be placed with its axis perpendicular to the thrust from the rail and consequently the only contact it can have with the rail is upon that element of the surface at which it is tangent to the rail. When the rails are stiff and difficult to bend the effect of this very limited contact is to crush and badly distort them.

As my rolls r r' are located, their axes are parallel to the thrust from the rail which thrust is consequently received against the shoulder of the rolls which engages the flanges F. In this manner I afford a much greater area of contact against the rail and obviate the distortion otherwise occurring.

The closer the rolls r r' are to the rolls R R'



the greater this thrust becomes owing to the greater leverage and the more apparent becomes the advantages of the pair of horizontal rolls over the single vertical one.

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

1. A cambering machine consisting of two parallel pairs of rolls between which the rail 10 passes, said rolls having passes adapted to receive the rail and support it in a direction parallel to the axis of the rolls and a cambering roll set at right angles to the first mentioned rolls and adapted to engage the rail 15 after it has passed between the first mentioned rolls and force it into a curved position.

2. A cambering machine consisting of two pair of rolls, having their axes parallel and each pair having flanges or shoulders adapted 20 to support the rail lengthwise of the rolls as it passes between them, and a single roll mounted beyond said rolls, its axis being at right angles to the axis of the first mentioned rolls.

25 3. A cambering machine consisting of two parallel pair of rolls, between which rolls the rail passes, one pair of said rolls being operated by suitable power and the other pair being revolved by contact with the bar; and a 30 cambering roll having its axis perpendicular to the axes of the before mentioned rolls, said before mentioned rolls having flanges or

shoulders as described adapted to support the rail in the plane of bending.

4. A cambering machine consisting of a pair 35 of driven rolls having a pass adapted to grasp and draw through the rail to be cambered, a pair of idle rolls between which the rail passes and parallel to the first mentioned rolls, both said pairs of rolls having shoulders or flanges 40 substantially perpendicular to the axis of the rolls which shoulders or flanges are adapted to afford support to the rail while being cambered, and a cambering roll having its axis perpendicular to the other rolls and adapted 45 to act against the rail.

5. In a cambering machine in combination with a pair of driven rolls having a pass between them adapted to receive the bar to be cambered, and a cambering roll set at right 50 angles thereto, a pair of rolls having their axis substantially parallel to the axis of the first mentioned pair of rolls and so formed that as the rail passes between them they are adapted to support it in the direction of their 55 length against the action of the cambering roll.

In testimony whereof I have affixed my signature in presence of two witnesses.

HERBERT C. RYDING.

Witnesses:

WM. F. SALTMARSH,

J. L. CHAPMAN.