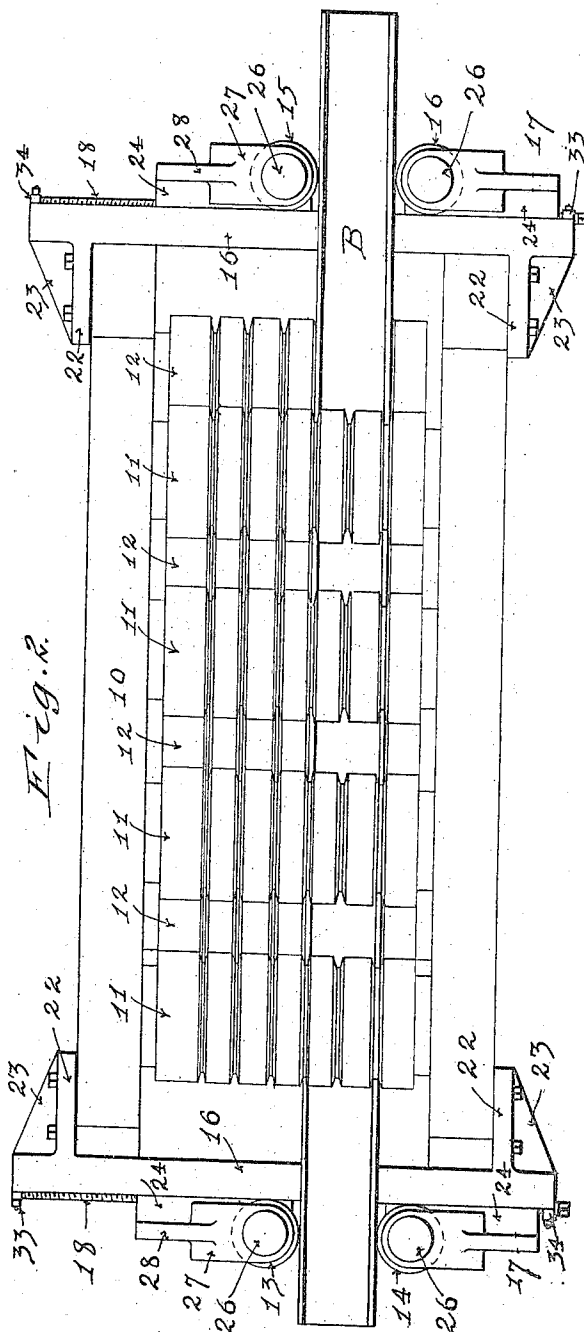
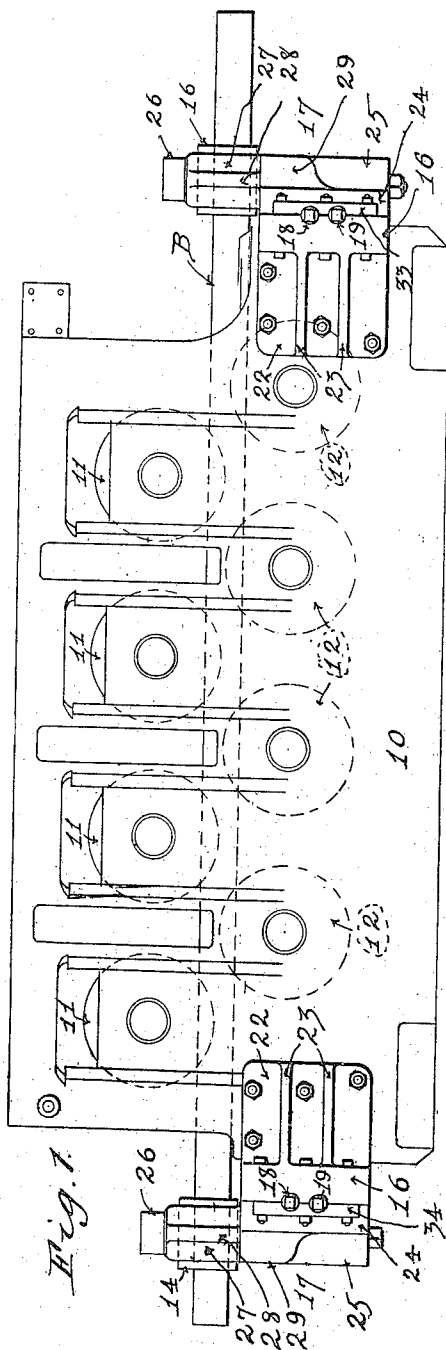


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G. W. THEISS.
CAMBER REMOVING MACHINE.
APPLICATION FILED OCT. 16, 1916.

Patented Feb. 5, 1918.

3 SHEETS—SHEET 1.

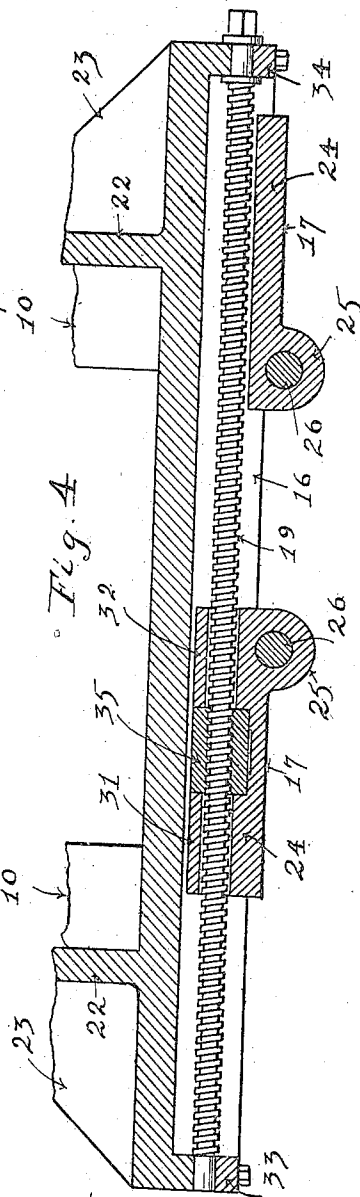
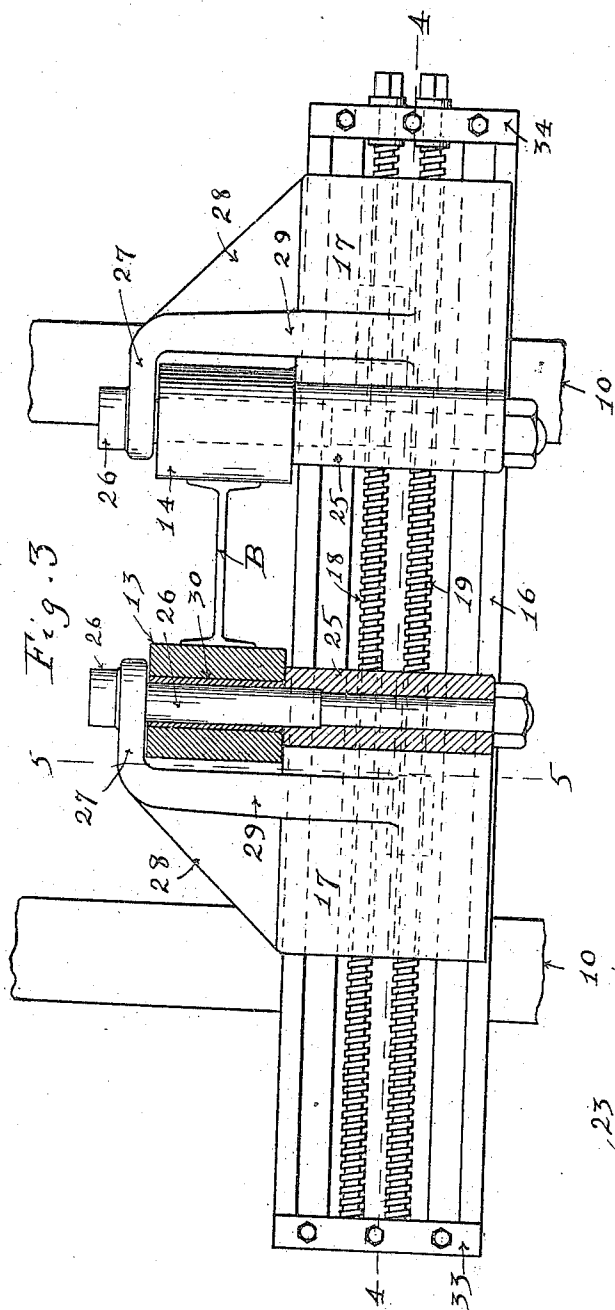


Inventor:
George W. Theiss,
by *Thos Macomber*
Atty.

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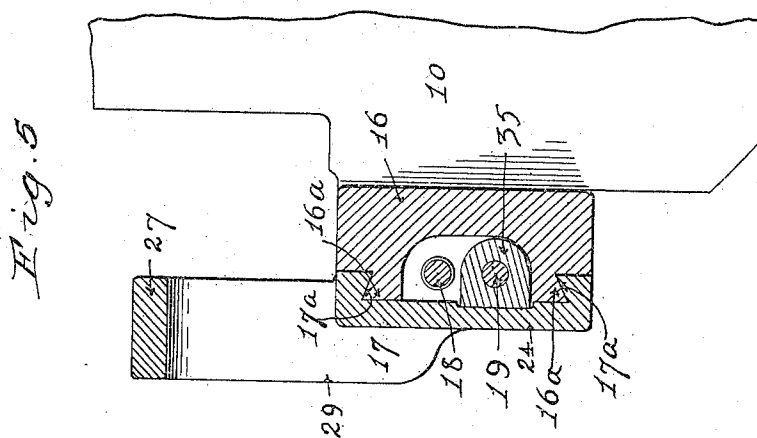
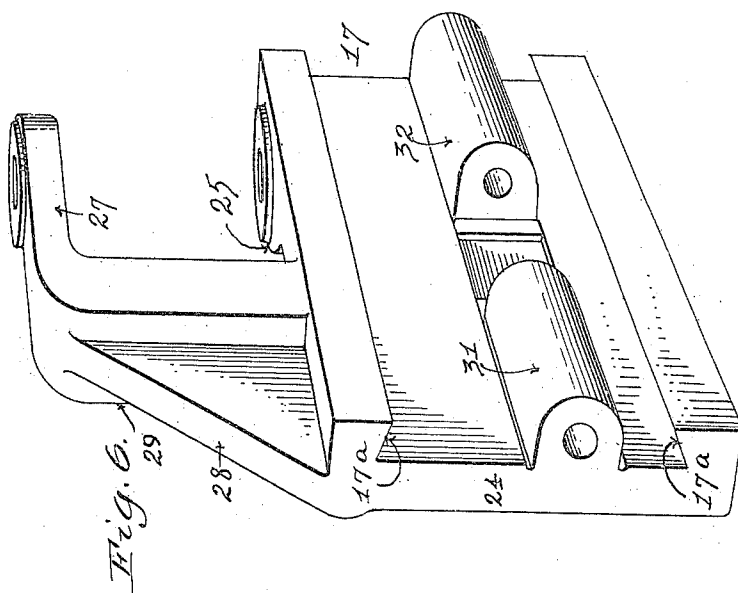


Inventor.
George W. Theiss
by *Wm. M. Mason*
Atty.

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3 SHEETS—SHEET 3.



Inventor:
George W. Theiss,
by *Howell* *W. Macomber*
Atty.

UNITED STATES PATENT OFFICE.

GEORGE W. THEISS, OF BUFFALO, NEW YORK.

CAMBER-REMOVING MACHINE.

1,255,666.

Specification of Letters Patent.

Patented Feb. 5, 1918.

Application filed October 16, 1916. Serial No. 125,973.

To all whom it may concern:

Be it known that I, GEORGE W. THEISS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Camber-Removing Machine, of which the following is a specification.

My invention relates to camber-removing machines, and more particularly to machines for removing the camber in beams, rails, and the like, as the same are passed through a straightening machine.

As is well known, in the fabrication of beams, rails and the like by the rolling process, there is present, after fabrication and upon cooling of the metal, a greater or less degree of camber in plane transverse to that of the web of the beam or rail. The object of my invention is, therefore, to attach to a straightening machine of the ordinary type camber-removing means, so that the article will come out of the machine both straightened and free from camber.

A further object of this invention is to overcome the deficiencies of devices hitherto employed, which deficiencies have been weakness, lack of rigidity, and consequent inability absolutely to remove the camber except by putting the beam or other object through the machine two or more times. Still another object is to afford a construction, absolutely strong and rigid, which may be adjusted to any width of beam or position of beam between the straightening rolls. For it will be evident to any person skilled in the art that a machine of this sort must be of great strength and wellnigh absolute rigidity. It must be easy and quick of adjustment to any degree of camber to remove the same by a single operation, and it must also be adapted to the utilization of the full width of the straightening rolls.

These and other objects will be evident from the following specifications and claims and from the annexed drawings, in which—

Figure 1 is a diagrammatic side elevation of a straightening machine provided with my camber-removing machine.

Fig. 2 is a similar view showing in plan.

Fig. 3 is an enlarged detail end elevation of Fig. 1 showing my invention in elevation and partly in cross-section.

Fig. 4 is a horizontal section on the line 4—4 of Fig. 3.

Fig. 5 is a detail section on the line 5—5 of Fig. 3.

Fig. 6 is a perspective of one of my bearing stocks or heads.

I will first describe my invention generally in relation to a straightening machine, referring especially to Figs. 1 and 2.

The heavy frame 10 has mounted within it the straightening rolls 11, 11, 12, 12. These rolls are mounted in bearings in the usual manner, and the rolls 11—11, are adjustable in vertical plane by well-known means (not shown on the drawings, but well understood by any person skilled in the rolling-mill art). The rolls are power driven by usual gearing (not shown) and are annularly recessed, as shown, to receive the flanges of beams, trusses, rails, etc., as the case may be. This is all familiar construction, and these rolls straighten the article in the plane of its web. But, of course, the machine has no appreciable effect upon the camber of the article, which is at right angles to the plane of the web; and this is the defect which my invention removes.

Adjustably mounted in bearings upon both ends of this machine are the camber-rolls 13, 14, 15, and 15^a. These rolls are so mounted that their inner faces may bear against the outer flange faces of the beam or rail as it passes through the machine.

Now, let it be supposed that an I-beam, B, such as shown, has a camber convex toward the rolls 13 and 15 and a consequent camber concave toward the rolls 14 and 15^a. In that case the rolls 13 and 15 are moved away from the beam B, while the rolls 14 and 15^a are moved into its path. Assuming that the beam B is entering the machine from the right-hand end in Fig. 2, immediately it is engaged by the rolls 11 and 12 the camber-roll 15^a tends to force the beam in the direction to remove the camber, putting strain upon the concave side and stress upon the convex side, with the result that, as the beam passes through the machine and is straightened, this correction becomes stable and permanent.

At the other end of the machine the camber-roll 13 having been moved away and the roll 14 moved into the path of the beam, the roll 14 will, as soon as the beam contacts it, first remove any camber which escaped the action of the roll 15^a before the beam was firmly gripped by the rolls 11 and 12. Consequently the camber-removing effect will be applied equally to the beam or rail throughout its entire length.

Having thus described the general features of a camber-removing device of this type, I will now describe and distinguish my improvements. And it is now evident, first, 5 that the required pressure effecting this object is very great, and consequently the camber-rolls must have resisting mountings approaching absolute rigidity under all pressures; second, the mountings must be laterally extended sufficiently to permit the 10 operation to the full width or capacity of the straightening rolls.

The rest-bar or bed 16: As clearly shown in Figs. 2, 3, 4, and 5, this bed is a heavy 15 steel casting, the main, transverse body of which extends out sufficiently beyond the frame 10 of the straightening machine to carry the bearing stocks 17 when moved out to the full capacity of the rolls 11 and 12. 20 This main body has a machined, dovetailed face 16^a engaging the dovetail seats 17^a of the bearing stocks 17. This face is longitudinally recessed between the dovetails to receive the screws 18 and 19 and the inwardly-projecting guide-lugs 31 and 32 and the 25 threaded blocks 35. Extending inwardly from the back sides of the beds 16 are heavy lugs 22, which are reinforced by the web-braces 23, and these lugs 22 are bolted to the sides of the frame 10. It will thus be seen 30 that this bed is of very great strength and rigidity, and is so secured to the frame of the straightening machine and so braced at its ends as to constitute a bed or support substantially absolutely rigid. 35

The bearing stocks 17: These are massive steel castings having their main body portions (see Fig. 6 especially) 24 and integral therewith the above-mentioned dovetail portions or extensions 17^a which engage the 40 dovetail portions of the bed. Adjacent to the inner ends are large vertical lugs 25 centrally bored to receive the pivot-bolts 26 of the camber-rolls 13, 14, 15, 15^a. Upon the 45 upper faces of the bodies 24 are inwardly-extending yokes 27 which engage over the pivot-bolts 26 at their upper ends. These yokes are broad and are reinforced by the webs 28 and the webs 29 (see Fig. 3) which 50 extend down midway the body 24. This construction gives a strong, rigid bearing or support for the camber-rolls. These rolls are preferably provided with anti-friction linings 30 (see Fig. 3). Between the two 55 dovetail extensions 17^a, 17^a, are lugs 31 and 32, clearly shown in Fig. 6, which are longitudinally bored to receive the screws 18 and 19. In one of each pair of stocks these lugs 31 and 32 are axially in line with the 60 screws 18, and in the other of each pair in axial line with the screws 19.

The adjusting means: The screws 18 and 19 have wrench-heads at one end and are journaled at both ends in flanges 33 34 on the 65 bed 16, and are collared to prevent axial

movement. The flange 33 is removably bolted to the bed 16 to permit the stocks being put in place on the dovetails of the bed.

Internally screw-threaded blocks 35, in length the distance between the lugs 31 and 32, engage the screws 18 and 19, respectively; and it is thus evident that turning of either screw 18 or 19 will move its respective stock in the direction determined by the direction of rotation of the screw. 75

Further description is unnecessary, for it will be evident that any one or either pair of camber rolls may be moved transversely of the line of movement of the beam or rail and accurately adjusted to the desired position; 80 and it should also be evident that, by the construction described, I secure rigidity of parts and consequent accuracy of action otherwise not attainable.

Having thus described my invention, I 85 claim:—

1. The combination with a straightening machine, of a bed standing edgewise and extending across the end of the frame of said machine with one of its vertical sides against 90 said end, said bed having lugs projecting laterally from said side and bolted to the sides of said frame, stocks slidably mounted on the other vertical side of said bed and having an interlocking connection therewith, 95 means to adjust said stocks lengthwise of the bed, and camber rolls mounted upon said stocks.

2. The combination with a straightening machine through which metal shapes may be 100 passed from end to end, of a bed plate extending across the end of the frame of said machine below the line of pass, the inner vertical side of said bed plate fitting against the end of said frame and having vertical 105 lugs extending laterally beside and bolted to the sides of said frame, the outer vertical side of said bed plate having a guide way, stocks fitting at their sides in said guide way and having upwardly projecting yokes at 110 opposite sides of the line of pass, camber rolls mounted in said yokes, and means to adjust the stocks lengthwise along said bed plate.

3. The combination with a straightening 115 machine, of a bed extending across the end of the frame below the line of pass, said bed having laterally projecting lugs on its inner vertical face secured to the opposite sides of said frame and also having guides on its 120 outer vertical face, stocks slidably mounted on said guides, beside said outer face, camber rolls mounted upon the top of said stocks, at opposite sides of the line of pass, and screws mounted on the bed, beside said 125 outer vertical face, and engaging the stocks to adjust the same.

4. The combination with a straightening machine of a camber-removing machine of the type described comprising vertically ar- 130

5 ranged beds rigidly secured to both vertical ends of the straightening machine and having reinforced extension ends projecting beyond the side of said machine to permit the spread of the camber-rolls to the full width of the straightening rolls, camber-roll stocks carried by the outer vertical faces said beds, camber-rolls pivoted in said stocks, reinforced supports for the pivots of said rolls to render the same rigid, and means for adjusting said rolls.

10 5. In a machine of the type described and in combination with a bed and adjusting

means, a camber-roll stock comprising a lower body dovetail connected at its inner side to said bed, a camber-roll and pivot therefor and a braced yoke for said pivot, mounted upon said stock said bracing for said yoke holding said roll rigidly against the outward and lateral thrust of the beam or rail pressing against said roll. 15 20

GEORGE W. THEISS.

Witnesses:

A. W. MACUMBER,
WM. MACUMBER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."