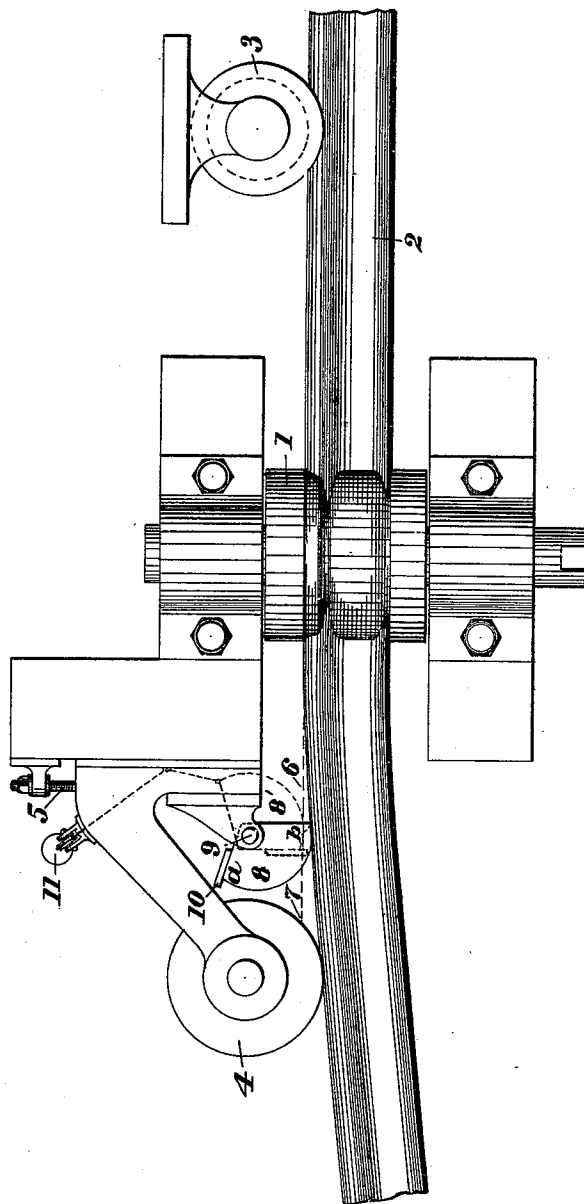


(No Model.)

H. C. RYDING.
CAMBERING MACHINE.

No. 520,708.

Patented May 29, 1894.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERBERT CHARLES RYDING, OF JOHNSTOWN, PENNSYLVANIA.

CAMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 520,708, dated May 29, 1894.

Application filed September 5, 1893. Serial No. 484,869. (No model.)

To all whom it may concern:

Be it known that I, HERBERT CHARLES RYDING, of Johnstown, county of Cambria, State of Pennsylvania, have invented a new and useful Improvement in Cambering-Machines, which invention is fully set forth and described in the following specification, due reference being had to the accompanying drawing.

My invention relates specially to that class of cambering machines used largely in rail rolling mills for cambering the hot rails after being rolled, to counteract the curvature due to unequal shrinkage in cooling, said cambering machines consisting essentially of a pair of horizontal rolls having a pass or opening between them adapted to grasp but not distort the finished rail and one or more vertical rolls set out of alignment with this pass so that, bearing against the rail, they force it out of a straight path and so camber or curve it.

In the drawing 1 represents the top one of a pair of horizontal rolls having a pass between them adapted to grasp the rail 2.

3 and 4 are two vertical rolls such as described above. 3 is set in line with the pass in rolls 1 while 4 is adjustable by some suitable means as shown at 5 whereby it may be set to give the rail the desired camber. Heretofore the hot rail has passed between rolls 1 and continued straight on in the dotted line 6 until it came against the cambering roll 4 at the point 7 where further forward motion caused it to bend in order to pass the roll 4. I have discovered that the end of the rail striking this roll causes a distortion of the end of the rail for a short distance before the bending action commences. This is due partly to the extreme end of the rail being the weakest part and least able to withstand the pressure of the roll and is also due to the impact of the rail against the roll.

In general my invention consists in providing a device by which the rail is gradually forced out of its straight position so that by the time the end comes into action with the cambering roll 4, it has already been deflected sufficiently to cause it to come in contact tangentially and without the shock and blow which it would otherwise receive. To do

this, I provide between the rolls 1 and 4 the cam 8 mounted upon the pivot 9. This cam is constructed having a continually increasing radius from the point *a* to *b* and normally stands in the dotted position 8', so that it will just be in contact with the straight rail issuing from the pass in rolls 1.

10, is a projection on the cam against which the end of the rail strikes.

The operation of the device is thus: The rail issuing from pass in rolls 1 comes in contact with the projection 10 in cam 8 and causes it to revolve, as it revolves, the increasing radius gradually forces the rail out of a straight line, and in a direction tangential to roll 4. By the time the cam has revolved far enough to bring the point *b* in action against the rail the end has passed the roll 4 and for the remainder of the rail the cambering is performed by the roll 4. When the rail has passed through the counterweight 11 returns the cam 8 to its normal dotted position 8', ready for the next rail. By this device it will be seen that I relieve the extreme end of the rail from any injurious action and gradually deflect it from a straight line in a manner which prevents distortion.

While it is customary to use the roll 3 it may be omitted or a plain guide or other stop substituted and when I speak of horizontal and vertical rolls I mean their relative position to each other as it is obvious that rolls 1 being vertical and roll 4 horizontal would not affect my invention.

Having thus described my invention, what I claim is—

1. In a cambering machine a cam normally out of the path of a straight bar or other article to be cambered passing through the machine and adapted, by rolling contact with the article, to force said article from its straight position.

2. In a cambering machine a cam normally out of the line of a straight bar or other article to be cambered passing through the machine and adapted to be automatically, by the passage of the article, brought into action against said article.

3. In a cambering machine in combination with a pair of rolls, a cambering roll and a cam interposed between the first mentioned

rolls and the cambering roll for the purpose of deflecting to the cambering roll the article to be cambered.

4. In a cambering machine, in combination
5 with a pair of rolls, a cambering roll and a
guiding device interposed between the first
mentioned rolls and the cambering roll for the
purpose of deflecting to the cambering roll
the article to be cambered.
10 5. In a cambering machine in combination
with a pair of rolls and a cambering roll a
cam adapted to gradually deflect the article
to be cambered and deliver it to the cambering
roll tangent thereto.
15 6. In a cambering machine, in combination
with a pair of rolls and a cambering roll, a

guiding device adapted to gradually deflect
the article to be cambered and deliver it to
the cambering roll tangent thereto.

7. In a cambering machine a pair of rolls, 20
a cambering roll and an interposed counter-
weighted cam for the purpose set forth.

8. In a cambering machine, a pair of rolls,
a cambering roll, and an interposed guiding
device for the purpose set forth. 25

In testimony whereof I have affixed my sig-
nature in presence of two witnesses.

HERBERT CHARLES RYDING.

Witnesses:

PAT. M. BOYD,
H. W. SMITH.