

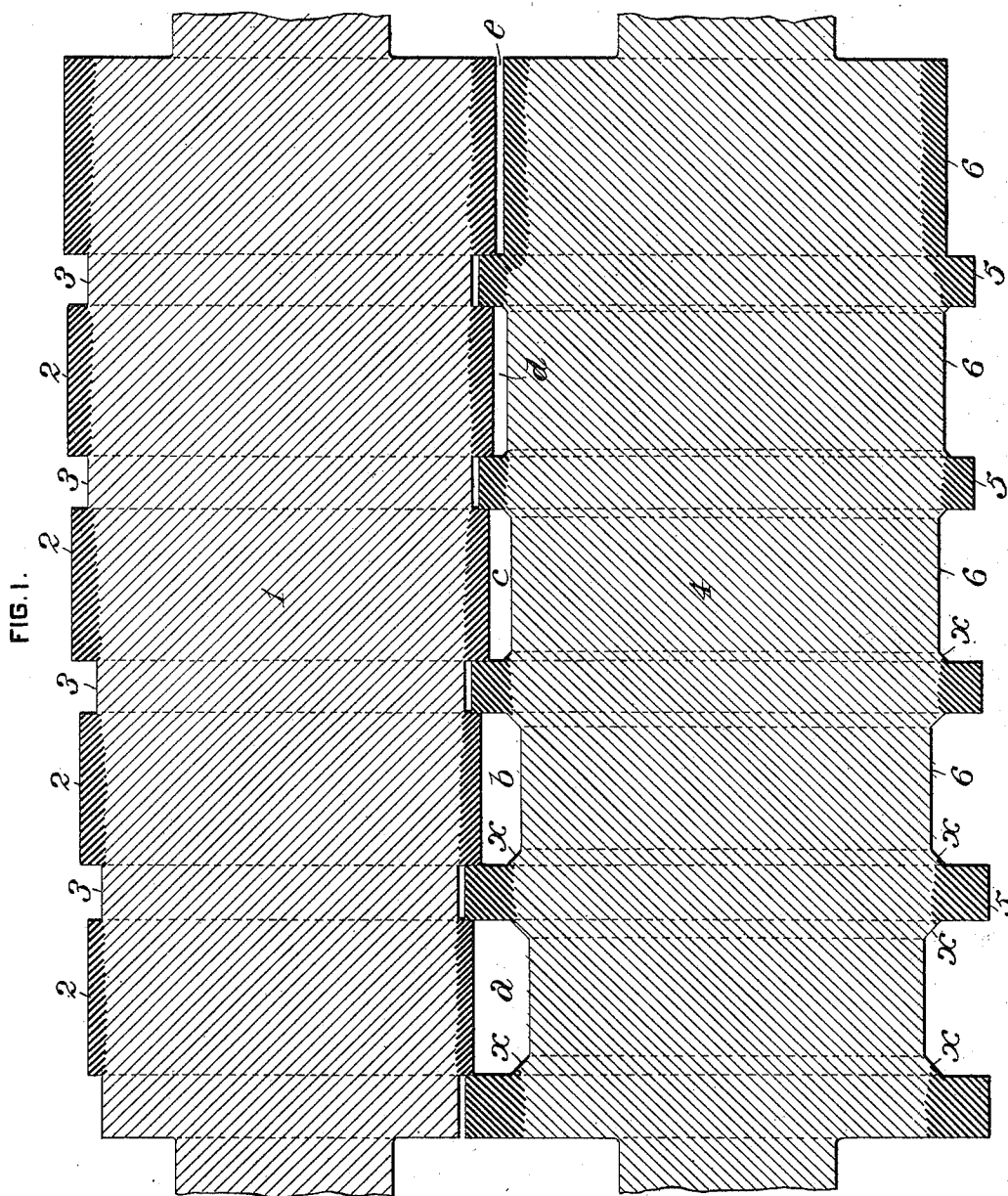
(No Model.)

J. S. SEAMAN.
ROLLS.

2 Sheets—Sheet 1.

No. 585,407.

Patented June 29, 1897.



WITNESSES:

Chas. F. Miller
F. E. Gaither

INVENTOR.

Joseph S. Seaman
by Lemuel S. Wolcott
Att'y.

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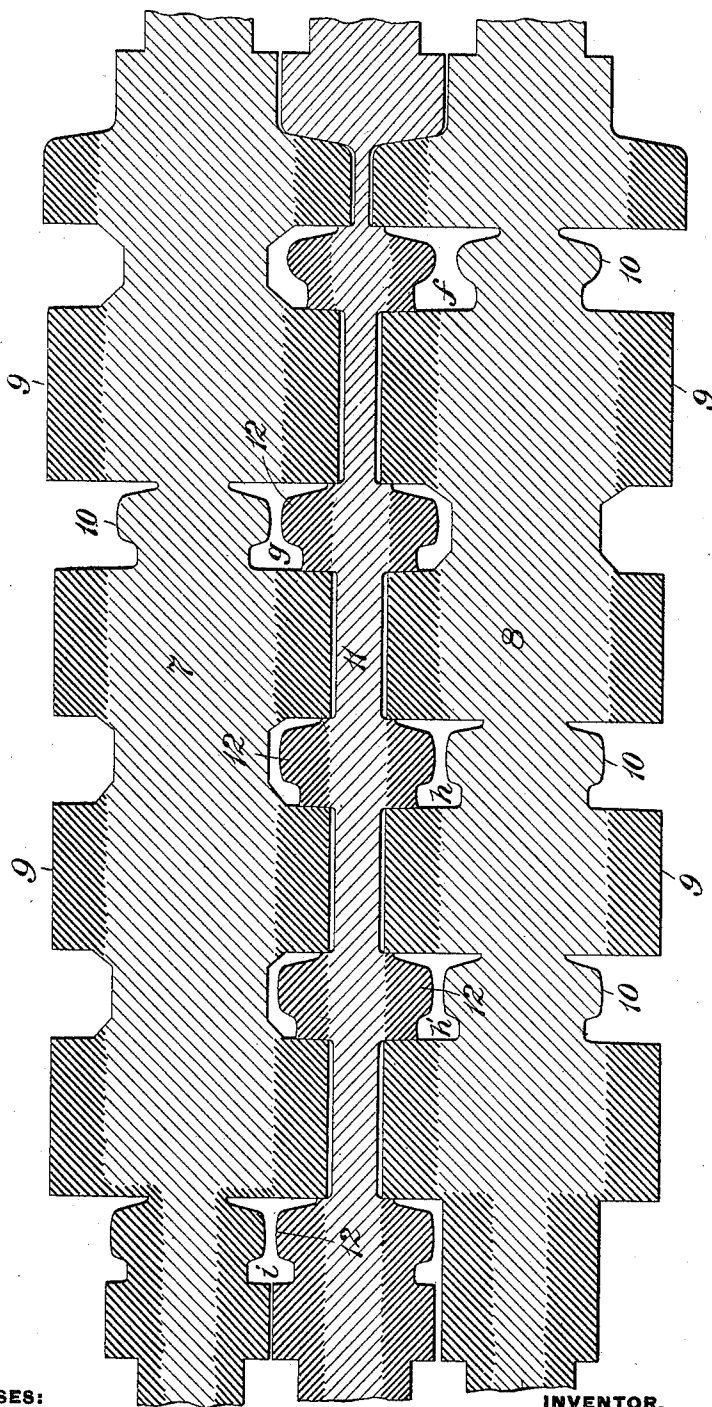
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FIG 2.



WITNESSES:

Chas. F. Miller
F. E. Gaither

INVENTOR.

Joseph S. Seaman
by Saml. S. Wolcott
Att'y.

UNITED STATES PATENT OFFICE.

JOSEPH S. SEAMAN, OF PITTSBURG, PENNSYLVANIA.

ROLLS.

SPECIFICATION forming part of Letters Patent No. 585,407, dated June 29, 1897.

Application filed March 26, 1897. Serial No. 629,313. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. SEAMAN, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Rolls, of which improvements the following is a specification.

The invention described herein relates to certain improvements in rolls for reducing metals.

Considerable difficulty and expense have heretofore been encountered in reducing metal by reason of the wearing away of the sides of the tongues and collars which form parts of the reducing-passes of the rolls. This wearing away of the sides increases the length of the passes in the direction of the axes of the rolls, and as such increase in dimension cannot be corrected by returning of the rolls new ones have to be substituted therefor.

The object of the present invention is to so construct the rolls as to reduce to a minimum this wearing away and consequent elongation of the passes.

It is a further object of the invention to combine in one stand of rolls the advantages derived from grain and chilled surfaces in rolling.

The invention is more fully hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional elevation of a pair of rolls provided with grooves or passes for the production of flats and embodying my improvements, and Fig. 2 is a sectional elevation of a three-high stand of rolls embodying my invention and provided with grooves or passes for the production of railroad-rails.

In the practice of my invention the roll 1, having the tongues 2, which are adapted to form portions of the passes or grooves in which the metal is reduced, is produced in the usual way by casting in the chill-mold. The chill may be continuous, so as to produce a uniform depth of chill over the entire surface of the roll, or the body portion of the mold may be made up of a series of chill-sections of a width equal to the desired width of the tongue 2 and a series of loam or sand rings alternating with the chill-sections, so as to produce

alternating chill and grained surfaces in the resulting roll. When the entire surface of the roll is chilled, as above stated, it is preferred to so regulate the chilling effect that the chilled portions will not extend into the roll a depth greater than the required depth of the collar-grooves 3, between the tongues 2, said grooves being formed by cutting away the roll in the usual or any suitable manner. The roll 4 is similarly constructed, the portion of the metal designed to form the collars 5 being chilled, while the portions of the rolls intermediate of the collars where the reducing-grooves 6 are to be cut are either cast without the chill, or if chilled in casting such chilled portions are partially or entirely cut away in the turning up of the roll. It will be seen that by reason of this manner of forming the rolls the passes *a b c*, &c., are provided with walls which have in part chilled surfaces and in part grained or unchilled surfaces, and that the surfaces of the two rolls which are in frictional contact with each other—i. e., the side walls of the collars and tongues—have chilled surfaces and are therefore less rapidly worn away than where grained or unchilled surfaces rub against each other.

It will be observed that the grooves in the roll 4 are provided with fillets *x* and that when an article is transferred from one pass to the other it is turned over or axially rotated to prevent the metal from finning out in the next pass and that the surfaces between the fillets is unchilled. Hence the surfaces of the article are brought alternately into contact with the grained surfaces of the roll. By reason of this alternating action the surfaces of the article being rolled are freed from scale, as the comparatively rough surface of a grained roll will tend to lift the scale from the article, whereas a smooth chilled surface will force the scale into the metal.

It is preferred to so construct the rolls that the final or finishing pass *e* will be formed entirely, or so much thereof as will bear upon the article, with chilled surfaces, so as to produce a smooth and more uniform surface on the article.

In the construction shown in Fig. 2 I have shown rolls constructed in accordance with

my invention for the reduction of rails or similar articles. It will be observed that the upper or lower rolls 7 and 8 have the collars 9 chilled, while the reducing-grooves 10, intermediate of the collars, have the surfaces 5 unchilled. The intermediate roll 11 has the tongues 12, whose surfaces form part of the reducing-passes, formed with chill-surfaces. These rolls may be constructed in the manner 10 hereinbefore described or in any other suitable manner known in the art. It will be observed that as an article is shifted without axial rotation from the pass *f*, between the lower and middle roll, to the pass *g*, between the upper and middle roll, the surfaces 15 which in the pass *f* are operated on by chill portions of said pass or groove are in the pass *g* subjected to the action of the grain-surfaces of said pass, and vice versa. 20 The same action or operation is produced with the article as it is shifted from the pass *g* to the pass *h* or *h'*, which are identical, or approximately so, in size and shape. The finishing-pass *i* has its surfaces chilled, so as 25 to produce a smooth uniform surface on the rail.

While I have shown my invention as applied to the manufacture of flats and rails, it is as readily applicable to rolls having

passes suitably constructed for the reduction 30 of other shapes or mercantile forms.

I claim herein as my invention—

1. A roll for reducing metal having the collars chilled and intermediate reducing-grooves unchilled, in combination with a roll 35 having the tongues chilled and the intermediate or collar grooves unchilled, substantially as set forth.

2. A roll for reducing metal, having collars chilled and the intermediate or reducing 40 grooves unchilled, in combination with a roll having the tongues chilled and the intermediate or collar grooves unchilled, each of said rolls having the walls of the finishing pass or groove chilled, substantially as set forth. 45

3. The combination of a pair of rolls having suitable reducing passes or grooves formed therein, a portion of the walls of said passes being formed of chilled metal, and the remaining portions of grained or unchilled 50 metal, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOSEPH S. SEAMAN.

Witnesses:

DARWIN S. WOLCOTT,
F. E. GAITHER.