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1,932,168

ROLL FOR MAKING ROLLED PRODUCTS AND METHOD FOR PRODUCING IT

Filed July 7, 1930

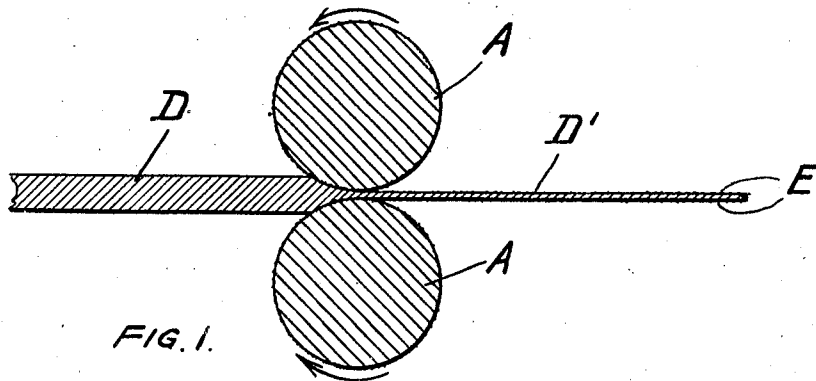


FIG. 1.

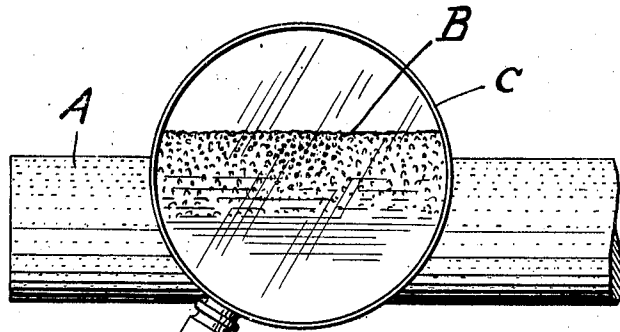


FIG. 2.

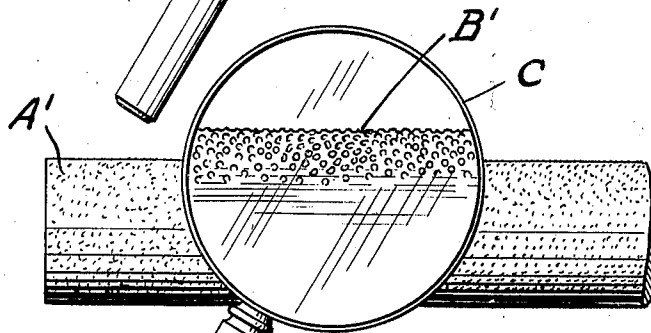


FIG. 3.

WITNESS:

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UNITED STATES PATENT OFFICE

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ROLL FOR MAKING ROLLED PRODUCTS AND METHOD FOR PRODUCING IT

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2 Claims. (Cl. 29—148.4)

My invention relates to an improvement in roll for rolling metal and other substances and method for producing it. The roll in accordance with my invention is more particularly advantageous for rolling wherever excessive slip occurs or is to be guarded against or where a certain type of matte finish is desired. Heretofore in the rolling of, for example, metal, the desirability of heavy reduction has been appreciated, but beyond a certain point such has not been accomplished with rolls heretofore known, since where heavy reduction is sought excessive slippage occurs and while slippage can be reduced by grooving or channeling the rolls, where such is done the cost of eliminating the corresponding ridges produced on the metal negatives the advantage of the heavy reduction.

Now, in accordance with my invention, I have discovered that if the working surface of a roll be indented with indentations of relatively superficial depth dispersed heterogeneously but uniformly over the surface in close proximity to one another, the indentations being either of regular or irregular contour, the roll will be effective for heavy reductions without slippage that will injure the face of the roll or the surface of the material being rolled or produce excessive heat, while, if desired, the surface of the rolled material may be easily brought to a smooth finish or the material may be utilized as produced by the roll where it is intended, for example, to paint, enamel or lacquer the surface.

Further, in accordance with my invention, I have discovered that if the roll be indented with indentations of regular or irregular contour dispersed heterogeneously over its surface in close proximity to one another, the roll surface may be subjected to the heat produced by friction or by the rolling operation with greatly reduced liability to checking, since the indenting of the roll largely increases the ratio of perimeter to cross section, thus avoiding cracking or checking of the surface in the expansion or contraction of the roll or its surface.

Having indicated, in a general way, the nature and purpose of my invention, I will proceed to describe in detail a preferred embodiment thereof, with reference to the accompanying drawing, in which:

Fig. 1 is a sectional view of a pair of rolls embodying my invention, in operative relationship to material being rolled.

Fig. 2 illustrates a portion of the roll embodying my invention, the portion being shown under

a magnifying glass and illustrating indentations of irregular contour.

Fig. 3 is a view similar to that of Fig. 2, the indentations illustrated being of substantially regular contour.

In the several views A indicates a roll having a vast number of indentations of irregular contour and relatively superficial depth, heterogeneously dispersed over its working surface in close proximity to one another. The indentations of roll A are indicated at B, Fig. 2, under the magnifying glass C.

Referring more particularly to Fig. 3, A' indicates a roll, the working surface of which is indented with a vast number of indentations B' of substantially regular contour and of substantially superficial depth, heterogeneously dispersed over the entire working surface in close proximity to one another. The indentations B' are shown in Fig. 3 under the magnifying glass C.

Referring more particularly to Fig. 1, AA indicates a pair of rolls the working surfaces of which are indented, for example, as illustrated in Fig. 2. D indicates a piece of material, as for example, copper or rubber or bakelite, etc., a portion of which D', has been passed through the rolls and greatly reduced. It will be noted that the upper and lower surface of the reduced portion D' of the piece is marked or roughened, as indicated at E, by the indented working surfaces of the rolls AA. The marking or roughening, which is relatively superficial, may be easily made smooth, as for example, by passage through a pair of smoothing rolls or, as has been indicated, if desired the surface produced may be retained or used as produced for painting, enameling, lacquering, or otherwise coating.

In producing the roll above described in accordance with my invention, the indenting may be effected by, for example, abrading the working surface of the roll, the abrading being effected by blasting the roll with an abrasive material, as sand, steel grit, steel shot, emery, or any other substance capable of producing indentations, it being noted that where indentations of irregular contour are desired, such will be produced by abrading with the use of irregular abrasive, for example, sand, steel grit, or the like, and where indentations of substantially regular contour are desired, an abrasive having a substantially regular contour, as for example, steel shot or small balls, will be used.

In producing a roll in accordance with the method embodying my invention, the roll is first

formed, then hardened and finally the working surface is indented, as described.

The roll in accordance with my invention will be found effective in obtaining heavy reductions of materials, such as copper, cellophane, and the like, without slippage and, at the same time, the surface of material reduced thereby may be readily smoothed or will be desirable without further treatment. Further, it will be noted that a roll produced in accordance with my invention will not readily check or crack under the influence of heat of friction in operation, due to the large increase in ratio of perimeter to cross section due to the vast number of indentations heterogeneously dispersed in close proximity over its surface.

What I claim and desire to protect by Letters Patent is:

1. Hardened steel rolls, intended and adapted for heavy reduction of cold metal, the operating surfaces of which are abraded to provide inden-

tations of varying irregular contour dispersed heterogeneously thereover in close proximity one to another, thereby so substantially increasing the ratio of perimeter to cross-section as to avoid cracking of the surface in the expansion and contraction of the surface accompanying the sudden temperature changes incidental to the rolling operation.

2. The process of rendering hardened steel rolls, intended and adapted for heavy reduction of cold metal, resistant to superficial cracking in the contraction and expansion of the surface accompanying the sudden temperature changes incidental to the rolling operation, which includes forming the rolls, hardening them, and sand-blasting their surfaces to form indentations of varying irregular contour dispersed heterogeneously thereover in close proximity one to another.

JAMES R. ADAMS.

25	100
30	103
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150