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BENDING ROLLERS FOR BAR OR ROD IRON BENDERS OR THE LIKE
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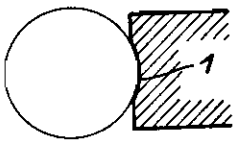

Fig.1

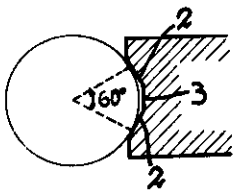

Fig.2

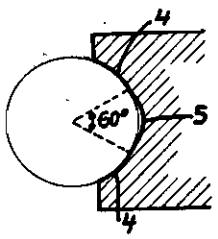

Fig.3

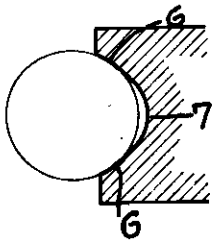

Fig.4

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ALIEN PROPERTY CUSTODIAN

BENDING ROLLERS FOR BAR OR ROD IRON BENDERS OR THE LIKE

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This invention relates to bending rollers for bar or rod iron benders or the like.

When bending reinforcing iron for concrete structures or even similar rolled bars or rods in spite of the usual limitation to a smallest diameter of the bend of five times the diameter of the rod, squeezing of the cross section of the rod and frequently also breaks in the bent hook frequently occur.

The invention consists in that the bending roller has a circumferential groove which must suitably be constructed shallower or deeper depending on the hardness of the iron to be bent with a transverse diameter corresponding to the diameter of the iron to be bent, with at the same time an addition to allow for inaccuracies. This construction gives a considerable improvement to the bending in so far as the bent iron acquires less hardness and decreases in expansion, that is, experiences less undesired alteration in condition than it does during the usual bending on flat rollers. This is due to the fact that the surface pressure between the iron and the bending roller is reduced and thus the disturbance of the condition is correspondingly reduced. The breaking of hooks is thus considerably restricted.

A further fundamental improvement results if the groove of the roller is so widened at the base that it allows the iron to move freely there. By this means instead of one surface contact central point a pair of such central points is given on the side parts of the iron and by this means the whole surface pressure is distributed so favourably with the complete freeing of the otherwise most strongly strained innermost curved portion that an absolute security against breaking of the hook or only against burdensome alterations in the condition of the metal is obtained. This is to be explained in that just those portions of the metal which are otherwise most strongly compressed and at the same time pressed by the roller pressure, which were otherwise squeezed out in parts and gave rise to groove cracks, now by being kept free from stresses no longer lead to any dangerous grooved parts.

A further improvement results if the roller groove does not have a simple straight line cross section but has a curved cross section adapted to the diameter of the iron. By this means the contact surface between the roller and the iron is increased to the advantage of the further prevention of damage to the condition of the iron. A favourable form of the adaptation leads to a partial egg cross section of the groove which then has a completely continuous course of the outline of the cross section between the slightly curved iron gripping portion and the strongly curved base portion of the groove so that even in the case of any inaccuracies in the measurements of the iron the iron can simply sink into the groove to a different depth without however experiencing anywhere any other than good clinging contact.

For the distancing apart of the places of contact relatively to the diameter of the iron a groove with an angle of approximately 120° between the cross section lines touching the iron at a tangent has shown itself particularly advantageous whether these are straight or curved in the manner stated in order to cling to the iron. The angle of about 60° at the centre in the iron thus formed between the two places of contact has proved itself favourable on the one hand in that the places of contact are sufficiently distanced from the most strongly compressed part of the rod and on the other hand in that they have not such a pronounced wedge-like inclination to one another that they would lead to an undue wedging in of the iron and a corresponding increase in the stresses of the curved parts.

The figures in the drawing illustrate diagrammatically the invention in a series of examples of embodiment of the structure of sections of the rims of the bending rollers with indicated cross sections of the iron to be bent.

According to Fig. 1 the bending roller has a shallow circumferential groove 1, the radius of the cross-section of which is 0.5 mm. greater than that of the iron to be bent. By this means the iron runs reliably in the roller even with slight variations in its thickness, and the increased surface of contact gives rise to the preservation of the iron in the manner stated.

According to Fig. 2 the roller has two tangential surfaces which open into an intermediate base surface 3 in such a way that the iron to be bent remains free from the base surface and is thus only engaged at the tangential contact points. The angle of the tangential surfaces 2 to one another amounts to 120°, so that the angle at the centre of the radii drawn from the centre of the iron to them as illustrated amounts to 60°.

According to Fig. 3, two groove parts 4 which are given a slight increase in diameter over the diameter of the iron, are separated from a base groove portion 5. Here while retaining the angle at the centre of about 60° for the main carrying radius the contacting surfaces are fitted to one another to favour a further diminishing of the surface pressure.

According to Fig. 4 the contact surfaces 6 are

curved as in the preceding case, but they are carried out here together with the base groove 7 altogether as an ellipse shaped line so that the corners present in the previous construction between the side and the inner circumferential parts are entirely removed here and a constant groove outline is obtained throughout.

As bending roller is to be understood throughout not only the one roller round which the rod is bent, but the counter pressure and pressure rollers, which cooperate in the bending may likewise have the new construction.

Bending rollers with a plurality of grooves are suitably constructed with a total width of groove equal to the thickness of the iron to be bent so that a lot of thin irons laid next to one another may be bent at the same time.

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