UNITED STATES PATENT OFFICE

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ROLLING MILL GUIDE

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The present invention relates to guides for rolling mills and the like having a foreguide and two or more guide rollers between the foreguide and a pair of working rolls for guiding the material to the pass. The purpose of the invention is to improve guides of the above mentioned type to enable them to retain the material more firmly in position during the rolling operation and to prevent it from twisting in the pass. The guide according to the invention is characterized by having a pair of rollers immediately adjacent to the working roller and forming the last guiding members for the material.

The invention is illustrated on the accompanying drawing in which Fig. 1 is a longitudinal section through a guide along the line E—E of Fig. 2. Fig. 2 is a section partly along line C—C and partly along line D—D of Fig. 1. The left side of Fig. 3 is an end view in the direction of the arrows A in Fig. 1 and the right side is a section along the line B—B of Fig. 1. Fig. 4 shows part of a guide according to another form of the invention and Fig. 5 shows still another form of the invention.

According to the form of the invention shown in Figs. 1—3 a casing 1 contains a pair of guide carriers 2. The height of the guide carriers can be adjusted by any suitable mechanism of known design not shown. They can be adjusted sideways by means of screws 3 and intermediate pieces 4. Between the pair of carriers is a foreguide comprising two halves 5, the inner profiles of which are suitably shaped according to the shape of the material being rolled. The foreguide is adjusted to have sufficient play to enable the material to be very easily introduced. Its purpose is mainly to lead the material to the opening between the pair of rollers described in the following.

At the forward end of each carrier 2, i.e., the part adjacent to the working rolls, is mounted a roller 6 on a vertical axle 7, the latter being carried in ball bearings 8. The profiles 9 of the rollers are suitably shaped corresponding to the form of the material being rolled and the pair of rollers together serve to exactly guide the material. As is apparent from the drawing the rollers of relatively small diameter and are disposable in the immediate vicinity of the rolls so as to deliver the guided material to a point well within and in proximity to the inner end of the angular space defined by the converging peripheries of the rolls, as shown in Figs. 1 and 4. The rollers therefore effectively prevent all tipping of the material and guide it to the pass in the rolls 10. That part 11 of each carrier 2 which carries the roller 6 is flexible and may suitably take the form of a leaf spring whereby the rollers will be resiliently pressed against the material. Consequently no adjustment will be necessary to compensate for minor inequalities in the dimensions of the material and a certain amount of wear on the rollers may be permitted before adjustment will be necessary.

The rollers may bear against the material with considerable pressure without scratching the surface of the material. The material is firmly held and narrow tolerances can be maintained.

Another form of the invention is illustrated in Fig. 4 in which the rollers have been replaced by ball bearings the outer circumferences 13 of which have been formed in accordance with the profile of the material. This form of the invention is especially suitable when rolling small sections.

Fig. 5 shows a roller bearing with its outer circumference similarly shaped, but having two rows of taper rollers, each row running on a separate inner race ring 15. This form of the invention is more suitable when rolling heavier sections than the form illustrated in Fig. 4. The roller can, if desired, be mounted on plain bearings.

The forms of the invention described above are by way of example only and the invention is not limited to these forms but is applicable to any modification falling within the scope thereof.

Having thus described my invention, I claim and desire to secure by Letters Patent the following:

1. A rolling mill guide comprising in combination a foreguide and a pair of carriers at opposite sides respectively of the foreguide and extending beyond an end of the latter, the extending end of each carrier being tapered and having arcuate sides, and having a roller journaled between said arcuate sides and forming the terminal end of the carrier, the roller supporting ends of the carriers being resilient and flexible to afford relative divergent movements of the rollers under the wedging action of an interposed work piece.

2. A rolling mill guide according to claim 1 wherein the rollers consist of the outer race rings of antifriction bearings mounted in the said extended ends of the carriers.

SVEN ERIK MALTE NORLINDH.

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