J. WILLIAMS.

GUIDE REST BAR FOR ROLLING MILLS.

APPLICATION FILED SEPT. 28, 1905.

1,015,751. Patented Jan. 23, 1912.

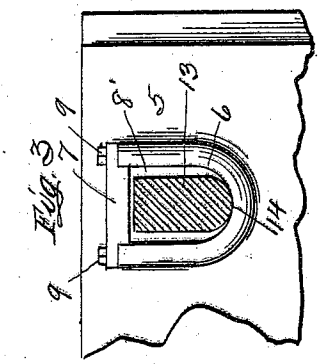

Fig. 3.

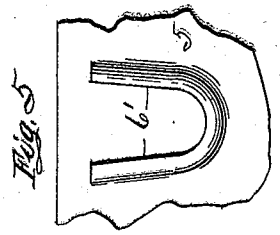

Fig. 5.

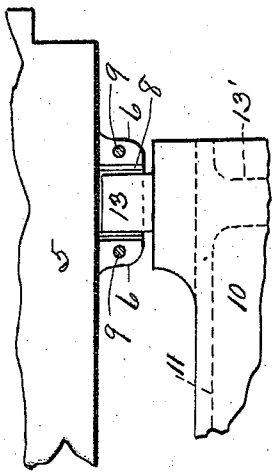

Fig. 4.

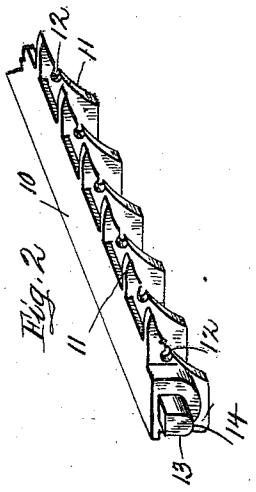

Fig. 2.

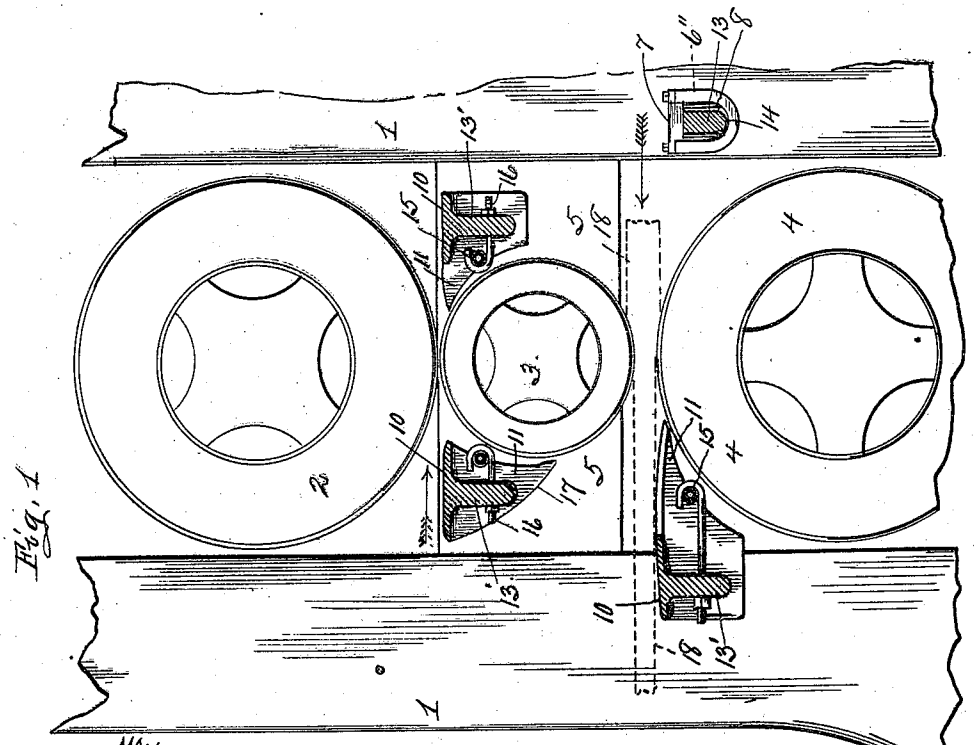

Fig. 1.

Witnesses:

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UNITED STATES PATENT OFFICE.

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GUIDE-REST BAR FOR ROLLING-MILLS.

1,015,751. Specification of Letters Patent. Patented Jan. 23, 1912.

Application filed September 28, 1905. Serial No. 280,530.

To all whom it may concern:

Be it known that I, JENKIN WILLIAMS, a citizen of the United States of America, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Guide-Rest Bars for Rolling-Mills, of which improvement the following is a specification.

This invention relates to improvements in guide rest bars used in connection with mills for rolling plates or bars of metal, and it is particularly applicable to plate mills.

The said invention consists in the peculiar construction of said guide rest bars, and the disposition or arrangement of the same with relation to the rolls, and of means whereby the said guide rest bars may be adjusted as a whole, toward or away from the roll or rolls and may be given any desired angle of inclination with relation to the roll or rolls, and held rigid and free from contact with the rolls, thereby preventing what is known in the art as "burring" or the gradual turning up of the edges of the guide rest bar which contacts with said roll.

Heretofore, so far as I am aware, guides applicable to plate mills consisted of a number of separate pieces, which were secured upon the rest bar and were separately adjusted with relation to the roll or rolls, and so arranged that the inner ends of the guides or guide plates rested upon the roll, the result of this arrangement was that the ends of the guide plate so resting on the roll became by constant wear, turned or stoved up so as to form an irregular cutting edge, which not only damaged the plates passing through the rolls but at times offered sufficient resistance to said plate as to cause breakage of the rest bars, and at times even of the roll itself.

The object of this invention is to avoid these difficulties, and to this purpose I produce a one piece guide rest bar, so disposed or arranged with relation to the roll that the inner edge adjacent to the roll is kept out of contact with the roll, yet very close thereto, and capable of being adjusted toward or away from the roll as a whole. I accomplish these objects by the device hereinafter more fully described, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is an end elevation of a set of ordinary "three high" rolls, such as are commonly used in mills for the manufacture of plate or bar metal, showing the application of my improved guide rest bars thereto. Fig. 2 is a perspective view of a portion of one of the guide rest bars, removed from the rolls. Fig. 3 is an enlarged side elevation of one of the bearing blocks for supporting the middle roll, showing the manner in which one end of the guide rest bars is supported and adjusted to the proper position with reference to said roll. Fig. 4 is a plan view of the same. Fig. 5 shows a modified form of said support.

In practicing my invention, a set of rolls may be used, consisting of three rolls, one arranged above the other, and mounted in housings 1, the upper roll 2 being of the same diameter as the lower roll 4, and the middle roll 3 being of less diameter, and being supported in carrying blocks 5, which are slidably mounted in the housings in such manner as to permit the plate or bar 18, to be passed between the upper roll 2 and the middle roll 3 and the lower roll 4 and the said middle roll. Upon the inner faces of these bearing blocks 5, are formed or secured pockets 6, substantially U shaped, the upper ends being open, the ribs forming said pockets projecting from said blocks at right angles thereto, and having flat inner faces. These pockets 6 are arranged at the sides, respectively, of the middle roll 3 and are used as supports for the receiving guide rest bar 10, and the delivery guide rest bar 10, respectively.

The guide rest bar 10 comprises a flat top or guide surface, and a nose portion comprising a series of webs 11, projecting downwardly and terminating in a curved point 17 on a line at or slightly below a line drawn transversely through the center of the middle roll, for the purpose of preventing the end of the plate or bar passing between the lower rolls and the middle roll curving upward around said middle roll, and an integral supporting portion 13'; and is provided with bearings or wings 13 at the ends thereof, which are suitably secured in the said pockets 6. The said guide rest bar is located on the receiving side of the mill at the pass between the middle and upper rolls. The guide rest bar 10, located at the de-

livery side of the mill, *i. e.*, at the pass between the middle and upper roll and the middle and lower roll, as shown in Fig. 1, comprises a flat top and a series of transverse webs 11, constituting the nose portion which projects toward the roll adjacent thereto and into close proximity but out of contact therewith, (in practice the requisite distance has been shown to be about one-sixteenth ($\frac{1}{16}$) of an inch from the face of the roll, and also a little below the upper face of the same) and is provided with bearings or wings 13, which are capable of being secured in bearings formed in the housings 1. The bearings 13 are provided with rounded bases 14 adapted to rest upon the bottom curve of the pockets 6, whereby the said guide rest bars may be given any desired angle of inclination with relation to the roll adjacent thereto, and capable of being adjusted from and toward the roll by liners 8 (Figs. 1 and 4). These liners or wedges are held in position by means of the caps 7, which are secured to the upper open ends of the pockets 6, by means of the bolts 9.

The curved faces of the guide rest bars adjacent to the roll are each provided with a recess 12, in which, if desired, a water supply pipe 15 may be secured by means of the curved ends of the bolts 16.

In Fig. 5 of the drawings, I have shown a slight modification of the form of the pockets 6, in which the side walls of the same are not parallel the one with the other, and in which wedge shaped liners are used to adjust the guide rest bars.

Having described my invention, what I claim and desire to secure by Letters Patent is:—

1. A rolling mill comprising housings, horizontal rolls mounted in said housings, and a guide-rest bar at the front or delivery side of said mill adjustable as a whole toward and away from one of the rolls, the edge of said guide-rest bar adjacent to the roll, extending along and in close proximity but out of contact with the roll, and means for holding said guide rest bar in its adjusted position.

2. A rolling mill comprising housings, horizontal rolls mounted in said housings, and a guide-rest bar at the front or delivery side of the mill adjustable as a whole toward and away from one of the rolls, said guide-rest bar having a nose portion forming the guide part of the bar extending along and projecting toward the roll into close proximity to the surface of said roll but out of contact therewith, and means for holding said guide-rest bar in its adjusted position.

3. In a rolling mill, the combination of a set of horizontal rolls, supporting members for the rolls, guide-rest bars arranged at the delivery and receiving sides of the mill, respectively, and adjustable as a whole toward or away from one of the rolls, the edge of said guide-rest bars adjacent to said rolls forming the guide part thereof, and extending along and projecting toward the roll into close proximity to the surface but out of contact therewith, and means for holding the guide-rest bars in the desired adjusted position.

4. A rolling mill comprising a stand of horizontal rolls mounted in bearings carried in housings, and a guide-rest bar arranged at the front or delivery side of the mill adjustable as a whole toward and away from one of the rolls, said guide-rest bar having a nose portion forming the guide part thereof extending along and projecting toward the roll mounted in said bearings, said guide-rest bar having end wings, the bearings having slots wider than the end wings, and arranged to receive the wings, and liners arranged to hold the guide rest-bar in its adjusted position.

5. In a rolling mill, the combination of a set of horizontal rolls, supporting bearings for the rolls, guide-rest bars arranged at the delivery and receiving sides of the mill, respectively, and adjustable as a whole toward and away from one of the rolls, the edge of each of said guide-rest bars adjacent to the roll extending along and projecting toward said roll into close proximity thereto but out of contact therewith, said guide-rest bars having end wings, and the bearings having slots to receive the wings, and liners arranged to hold the guide-rest bars in their adjusted position.

6. The combination of a set of rolls arranged in a vertical tier, a rest bar the upper portion of which has a flat upper surface, the edge of said upper portion being adjacent to one of the rolls but out of contact therewith, means whereby said bar may be adjusted horizontally toward and from the rolls as a whole and tilted about an axis lengthwise of the bar, and means for holding the said bar in its adjusted position.

In testimony whereof, I affix my signature, in presence of two witnesses.

JENKIN WILLIAMS.

Witnesses:
M. K. COSTER,
ALFRED M. LEE.