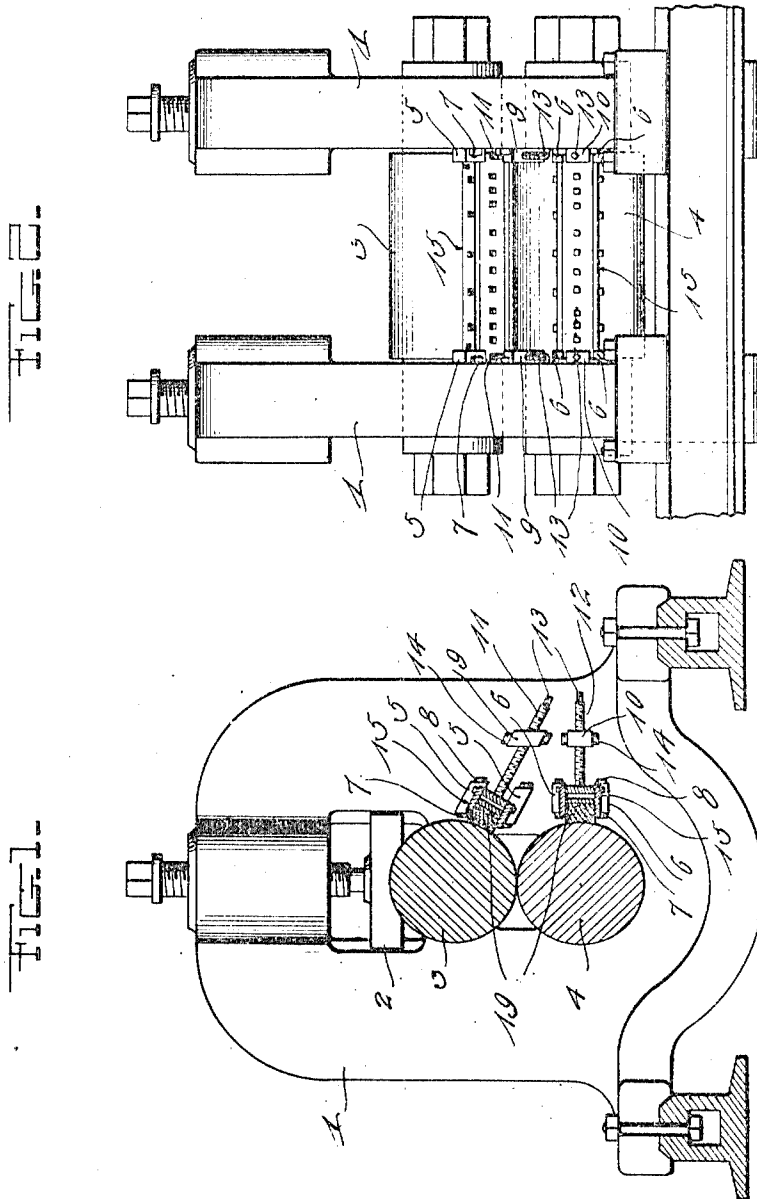


M. H. RICHARDS.
 APPARATUS FOR GRINDING AND POLISHING ROLLS.
 APPLICATION FILED FEB. 12, 1912.

1,040,759.

Patented Oct. 8, 1912

2 SHEETS-SHEET 1.



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Matthew H. Richards.

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 Attorneys

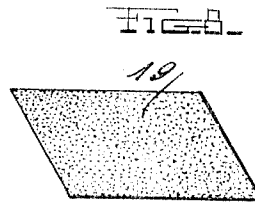
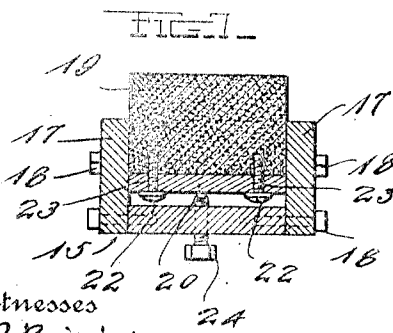
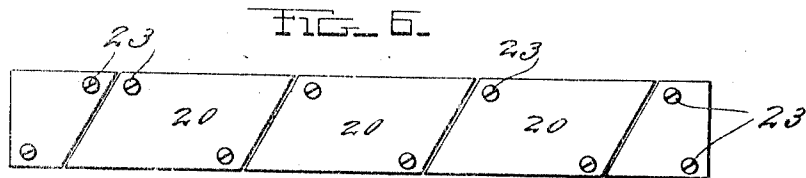
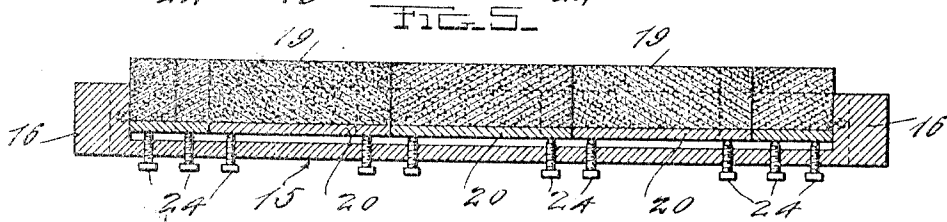
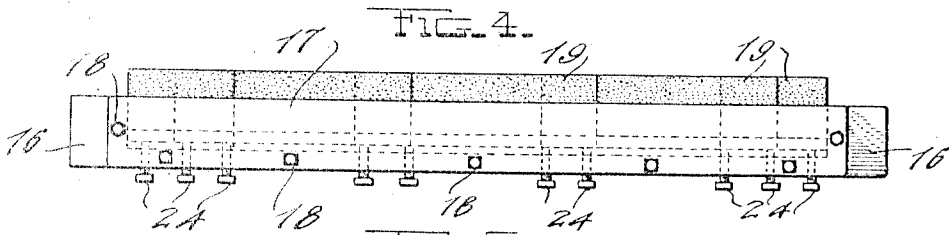
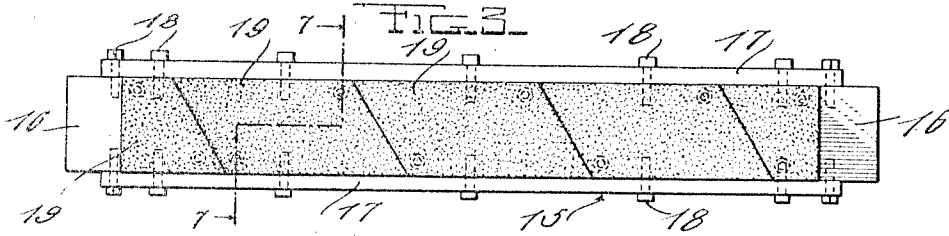
Witnesses
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UNITED STATES PATENT OFFICE.

MATTHEW H. RICHARDS, OF NEW CASTLE, PENNSYLVANIA.

APPARATUS FOR GRINDING AND POLISHING ROLLS

1,040,759.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed February 12, 1912. Serial No. 677,094.

To all whom it may concern:

Be it known that I, MATTHEW H. RICHARDS, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Grinding and Polishing Rolls; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in apparatus for grinding and polishing rolls and which is particularly adapted for grinding and polishing the rolls of tin plate mills.

One object of the invention is to provide a grinding and polishing apparatus for rolls which may be employed without stopping or interfering with the operation of the mill and which will smoothly, evenly and quickly grind and polish the rolls without forming ridges thereon.

Another object is to provide an apparatus of this character which will be simple and inexpensive in construction, efficient and reliable in operation and which may be readily put into operation by one man.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangements of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a central vertical sectional view of a rolling mill showing my improved grinding and polishing mechanism applied to the rolls thereof; Fig. 2 is a front view of the same; Fig. 3 is an inner side or face view of the grinding blocks and their supporting box or holder; Fig. 4 is a plan view of the same; Fig. 5 is a horizontal sectional view of the holder and grinding blocks; Fig. 6 is a plan view of the block protecting plates secured to the inner sides of the grinding blocks; Fig. 7 is a cross sectional view through the blocks and holder taken on the line 7-7 of Fig. 3; Fig. 8 is a plan view of one of the grinding blocks showing the shape of the same.

Referring more particularly to the drawings, 1 denotes the housings or supporting standards of a rolling mill. In the standards are arranged the bearings 2 of upper

and lower pressing rolls 3 and 4 to which my improved grinding and polishing apparatus is applied.

The grinding and polishing apparatus comprises upper and lower pairs of supporting blocks 5 and 6 which are secured to the inner sides of the standards or housings 1 as shown in Figs. 1 and 2 of the drawings. The guide blocks 5 and 6 have on their ends attaching lugs 7 provided with bolt holes adapted to receive fastening bolts or screws 8 whereby the blocks are secured to the inner sides of the housings or standards 1. The upper pairs of guide blocks which support the guiding devices for the upper roll are disposed at an angle or inclination one above the other and are spaced suitable distances apart as shown. The blocks 5 are arranged slightly below the center of the upper roll so that the grinding devices when applied thereto will engage the lower portion of the adjacent side of the roll 3 as shown. The lower pairs of guide blocks 6 for supporting the grinding devices for the lower roll are arranged one above the other and spaced on opposite sides of the center of the lower roll whereby the grinding devices applied thereto will engage the adjacent side of the lower roll along its center line.

To the inner sides of the standards or housings 1, a suitable distance from the guide blocks 5 and 6 and in line with the center of the space between said blocks are screw supporting blocks 9 and 10, said blocks having therein threaded passages adapted to receive the adjusting screws 11 and 12 for the grinding devices. The threaded passages in the upper blocks 9 are formed at an angle corresponding to the angle of the guide blocks 5 whereby when the upper screws 11 are engaged with said apertures, said screws will be supported at a corresponding angle so that the inner ends of the screws will squarely engage the outer sides of the grinding devices when screwed into engagement therewith. The outer ends of the screws 11 and 12 are squared as at 13 to receive a suitable wrench whereby the screws may be readily operated to adjust the grinding devices in the guides and supporting blocks 5 and 6 as will be hereinafter more fully described. The screw supporting blocks 9 and 10 have on their sides attach-

ing flanges 14 provided with holes adapted to receive fastening bolts or screws whereby the blocks are secured in position on the inner sides of the standards 1.

My improved grinding devices each comprise a holder consisting of a box or casing 15 having its outer side and end cast integral, said ends being of considerable width or thickness to form guide blocks 16. The top and bottom sides 17 of the box or casing are in the form of flat plates secured to the upper and lower edges of the outer side and ends of the box by fastening screws 18 as shown. Arranged in the boxes or casings 15 are a series of grinding blocks 19 formed of emery or other suitable abrasive material. Any suitable number of blocks 19 may be employed and said blocks have their engaging ends formed at an oblique angle to the sides thereof so that when applied to the rolls, no ridges will be formed by the latter as is sometimes occasioned by cracks between the grinding blocks when the engaging ends of the latter are square or extend at right angles across the casing or holder.

Secured to the inner side of each of the grinding blocks 19 is a backing or lining plate 20. The plates 20 correspond to the shape of the blocks to which they are attached. The plates 20 are secured to the inner sides of the blocks by fastening screws 22 which are engaged with screw holes 23 arranged near the opposite ends of the plates as shown. The screws 22 when inserted through the holes 23 are screwed up into the blocks and thus firmly secure the plates to the inner sides of the blocks as shown. Arranged in the back or outer side of the box or casing are a series of block adjusting screws 24 two of which are preferably provided for each block. The screws 24 when thus arranged have their inner ends engaged with the back or lining plates or the blocks and are adapted to be screwed inwardly through the outer side of the casing, thus projecting or pushing the grinding blocks outwardly to a greater or less extent from the box or casing 16. By providing the backing or lining plates 20, it will be seen that the inner ends of the adjusting screws 24 will be prevented from wearing or drilling holes in the inner ends of the grinding blocks.

In applying the devices the guide blocks 16 formed by the ends of the holders containing the grinding blocks are engaged with the upper and lower pairs of guide blocks 5 and 6 on the inner sides of the standards 1 and when thus arranged the holders will be in engagement with the inner ends of the adjusting screws 11 and 12 mounted on the inner sides of the standards 1 as hereinbefore described. When in this position the holders are adjusted to bring the outer surfaces of the grinding blocks

into engagement with the surfaces of the rolls by turning the screws 11 and 12 inwardly as will be readily understood. It will also be understood that by turning the screws 11 and 12 inwardly to a greater or less extent the pressure of the grinding blocks on the rolls may be regulated. By providing the grinding blocks with the individual adjusting screws 24 as hereinbefore described it will be seen that the outer surfaces of the blocks may be kept in perfect alinement and as the blocks become worn, they may be further projected from the holders.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is:

1. In a rolling mill, the combination of housings, a roll grinding apparatus adjustably mounted on the housings and adapted to be brought into engagement with the rolls of the mill, and comprising pairs of guiding and supporting members suitably secured to the housings of the mill, block holding boxes having on their ends guiding and supporting lugs adapted to be slidably engaged with said guiding and supporting members, a plurality of grinding blocks adjustably arranged in said boxes, said blocks having their abutting ends formed at oblique angles, means whereby the grinding blocks are adjusted in said holders to project the blocks to a greater or less extent from the holders, and adjusting screws operatively mounted on the housings of the mill and adapted to be engaged with said boxes whereby the latter are adjusted to bring the grinding surfaces of the blocks into engagement with the rolls of the mill.

2. In a rolling mill, the combination of housings, a roll grinding apparatus adjustably mounted on the housings, and adapted to be brought into engagement with the rolls of the mill, and comprising pairs of guiding and supporting members suitably secured to the housings of the mill, block holding boxes having their ends constructed to form guiding and supporting lugs adapted to be slidably engaged with said guiding and supporting members, a plurality of grinding blocks adjustably arranged in said boxes, said blocks having their engaging ends formed at oblique angles, backing plates secured to the inner sides of said grinding blocks, said plates corresponding in shape to said blocks, block adjusting screws arranged in the outer

side of the boxes and adapted to be engaged with the backing plates of the blocks whereby the latter may be projected from and adjusted in the box, and box adjusting screws
5 operatively mounted on the housings of the mill and adapted to be engaged with the block holding boxes whereby the latter are adjusted to bring the grinding blocks therein into operative engagement with the surfaces
10 of the rolls of the mill for grinding and polishing said rolls.

3. In a roll grinding apparatus, a box or casing comprising outer sides and ends cast integral said ends being of greater thickness
15 than the sides to form guide blocks, plates secured to the edges of the ends and outer side of the box to form the top and bottom sides thereof, a series of grinding blocks formed of abrasive material and having
20 their engaging ends disposed at oblique

angles to the sides thereof, block protecting plates secured to the inner sides of the grinding blocks, block adjusting screws arranged in the outer side of the box and adapted to engage said protecting plates whereby the
25 grinding blocks may be adjusted and projected to a greater or less extent from the box, means whereby the box or casing is adjustably supported in operative position on the mill, and means to adjust the box where-
30 by the grinding blocks therein are brought into operative engagement with the rolls of the mill.

In testimony whereof I have hereunto set my hand in presence of two subscribing
35 witnesses.

MATTHEW H. RICHARDS.

Witnesses:

WALTER S. REYNOLDS,
MARY E. NORRIS.