Nov. 9, 1943. R. F. KINTER ET AL 2,333,937

GUIDE FOR RAIL MILLS

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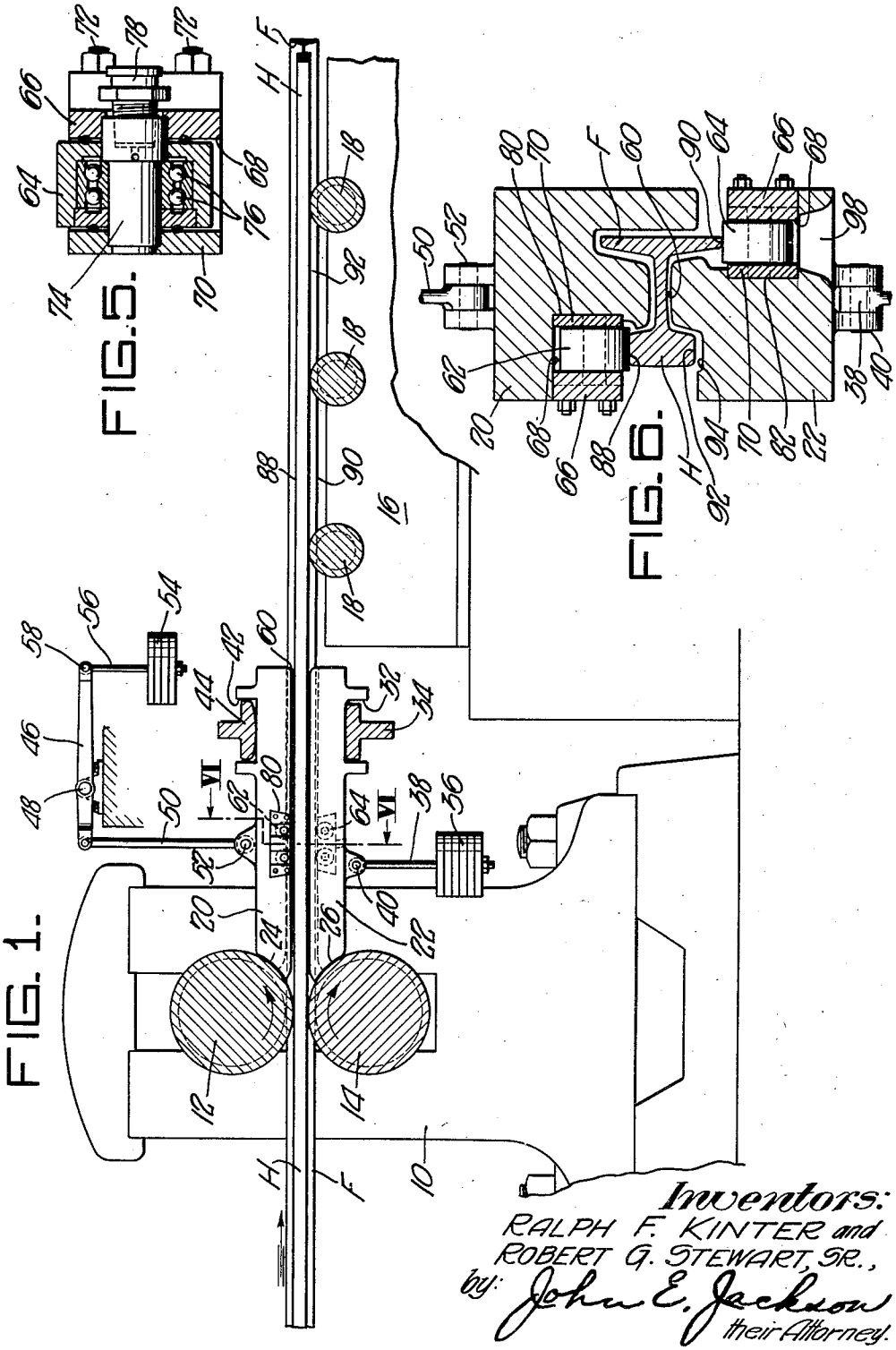


FIG. 1.

FIG. 5.

FIG. 6.

Inventors:
RALPH F. KINTER and
ROBERT G. STEWART, SR.,
by: John E. Jackson
their Attorney.

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FIG. 2.

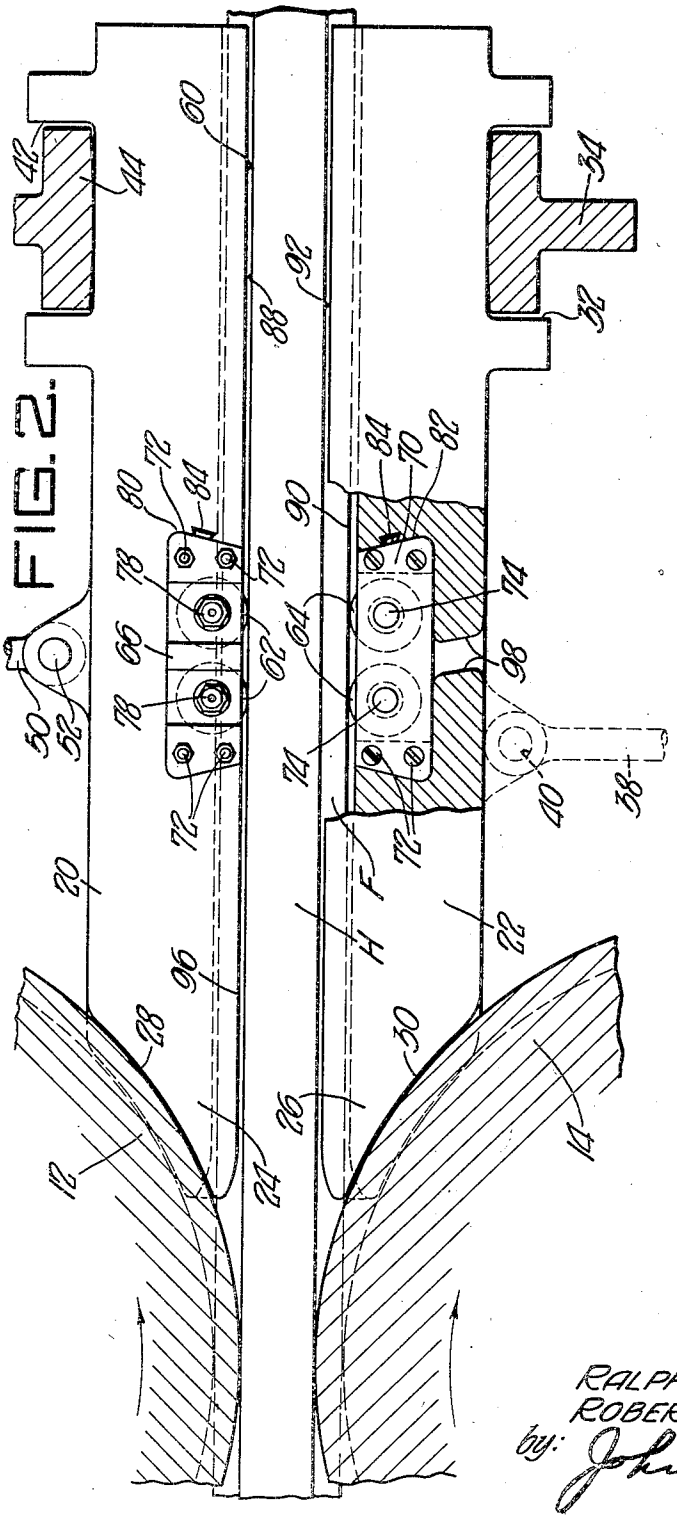


FIG. 4.

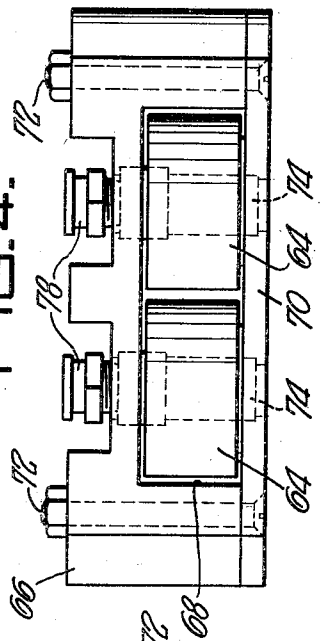
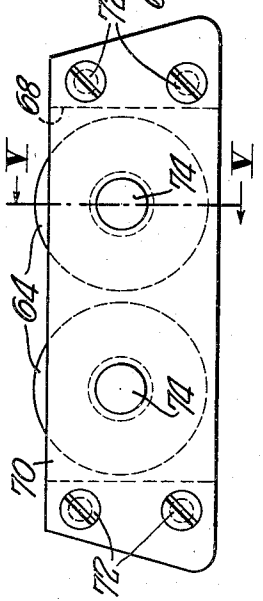


FIG. 3.



Inventors:
RALPH F. KINTER and
ROBERT G. STEWART, SR.,
by: John E. Jackson
their Attorney.

Patented Nov. 9, 1943

2,333,937

UNITED STATES PATENT OFFICE

2,333,937

GUIDE FOR RAIL MILLS

Ralph F. Kinter, North Braddock, and Robert G. Stewart, Sr., Pittsburgh, Pa.

Application August 13, 1941, Serial No. 406,707

4 Claims. (Cl. 80—51)

The present invention relates to improvements in rail mill stripper guides adapted to prevent scratching the head of a rail as it comes from the mill.

The improved guide includes upper and lower members jointly defining a passageway which corresponds approximately with the active pass defined by the coacting grooved rolls of the mill except that the passageway is slightly larger than the finished rail size.

Each stripper guide member carries one or more guide rollers whose peripheries extend into the passageway to thus keep the finished rail spaced away from the inner surfaces of such passageway. In other words, the stripper guide rollers insure clearance between the finished rail and the inner surface of the guideway passage for the express purpose of holding the rail clear of the surface of the passageway so as to prevent scratching or scoring of the rail.

The above and more detailed features of the invention will be fully apparent from the following detailed disclosure when read in connection with the accompanying drawings, in which:

Figure 1 is a sectional view of a finishing stand of rolls of a rail mill showing the improved stripper guide of the present invention applied thereto;

Figure 2 is a fragmentary detail view on an enlarged scale illustrating the construction of the improved stripper guide;

Figure 3 is a detached detail view of an insert unit carrying stripper guide rollers constituting an important feature of the invention;

Figure 4 is a plan view of Figure 3;

Figure 5 is a section on line V—V of Figure 3; and

Figure 6 is a section on line VI—VI of Figure 1.

Referring in detail to the drawings, the numeral 10 represents a housing or roll stand supporting the finishing rolls 12 and 14 of a conventional type of rail mill. These rolls are of conventional form and are grooved so that they jointly define an active pass corresponding to the cross sectional contour of a T-rail such as used in conventional railway track installations.

Heretofore rails leaving the mill have been passed through various types of guides, but the guides heretofore used have been open to the objection that the rails rubbing thereon become scratched or otherwise defaced. The trade demands high standards of quality and scratching or scoring of the rail frequently results in the customer not accepting the rail. To overcome this shortcoming of conventional prior practice we provide, in combination with the finishing rolls of the rail mill, the improved stripper guide now to be described.

The guide members serve as strippers for directing the outwardly traveling rail in a straight path to a suitable cooling bed 16 which consists of a plurality of rolls 18 driven in a conventional manner for carrying away the finished rail. Our improved stripper guide includes upper and lower members 20 and 22 whose inner extremities 24 and 26 are shaped to provide arcuate portions 28 and 30 of approximately the same radius as that portion of the roll with which they coact.

The outer end of the lower member 22 is provided with a notched portion 32 which fits over a stationary support or rest bar 34. The notched construction holds the stripper guide bar against longitudinal movement but yet permits the inner end 26 to swing downwardly so that the arcuate portion 30 makes a rubbing contact with the surface of the lower roll 14. Ordinarily the weight of the stripper guide member 22 is sufficient to maintain proper contact with the roll. However, if desired, a weight 36 may be provided fastened to a suitable bar 38 whose upper end carries a pin which extends through an opening 40 formed in the guide member.

The upper stripper guide member 20 is provided with a notched portion 42 which makes a fulcruming engagement with a stationary bar 44. A lever 46 pivoted at 48 is connected by a link 50 and a pin 52 with the upper guide member 20, and a counterweight 54 carried by a rod 56 is suspended from a pin 58 secured to the free end of the lever 46. As thus arranged, the counterweight tends to rock the stripper guide member 20 about the rest bar 44 as a fulcrum to yieldingly hold the arcuate portion 28 of the upper guide member in rubbing contact with the upper roll 12 of the mill.

The stripped guide members 20 and 22 as thus arranged jointly form a grooved passageway indicated generally at 60. The passageway serves to confine the rail as it leaves the active pass defined by the rolls 12 and 14. The inner extremities of the stripper guide members 20 and 22 extend close to the nip of the coacting rollers. Thus as the rail leaves the mill the guide members function as strippers and guide the rail in a straight path toward the cooling bed. The size and shape of the passageway 60 will correspond approximately to the active pass of the rolls as shown in Figure 6. However, the passageway will be slightly in excess of the dimensions of the rail which it guides, and to prevent scratching or otherwise defacing the finished rail in accordance

with the present invention, we provide an improved antifriction rail guiding means.

In the embodiment of the invention illustrated, this improved guiding means takes the form of respective pairs of upper and lower antifriction rollers 62 and 64. These rollers are desirably mounted in quick detachable units or subassemblies. The upper and lower sub-assemblies or units are substantial duplicates; therefore, a description of one will suffice for both.

As best shown in Figures 3 to 5, each subassembly or unit consists of a block 66 notched as at 68 to provide a recess to receive the rollers. The notch 68 is bridged by a plate 70 which is secured to the block by through-bolts 72. Studs 74 are jointly supported by the block 66 and the plate 70, as shown in Figure 5, and each stud 74 carries a ball bearing 76 fitted to the interior of the roll as shown in Figure 5. A suitable fitting 78 is provided to facilitate the introduction of grease or other lubricant into the bearing roller.

The upper and lower stripper guide members 20 and 22 are provided with dove-tail or undercut cavities 80 and 82 of a size and shape to make a neat fit with the oblique ends of blocks 66. If desired, wedges or keyways 84 may be employed to removably lock the blocks 66 to the respective guide members. The size of the rollers 62 and 64 is such that the peripheries thereof extend into the passageway jointly formed by the upper and lower guide members 20 and 22. Thus there is always maintained a clearance between the rail and the inner surfaces of the stripper guide passageway.

From the drawings it will be apparent that the upper guide rollers 62 are positioned in the guide member 20 for coaction with a side face 88 of the head H of the rail. Similarly, the guide rollers 64 are positioned in the lower guide member 22 for coaction with the guide edge 90 of the base flange F of the rail. As thus arranged, the rollers 64 hold the side face 92 of the rail head clear of the inner surface 94 of the portion of the guide passageway formed by the lower guide member 22. The upper rollers 62 hold the face 88 of the rail head H clear of the surface 96 of the guide passageway formed by the upper guide member 20. It is apparent that there is always provided a running clearance through the outcoming rail and the guideway surfaces of the upper and lower guides 20 and 22. Since the guide rollers 62 and 64 are mounted on antifriction bearings, it will be apparent that the oncoming rail is supported with a minimum amount of friction. In this way scratching of the surface is avoided and an improved product is secured. An opening 98 is provided in the lower guide member as shown to permit the escape of roll scale.

While we have described quite precisely the particular embodiment of the invention illustrated, it is to be understood that the drawings and descriptive matter are to be interpreted in an illustrative rather than a limiting sense.

We claim:

1. A rolling mill of the character described comprising upper and lower stripper members whose inner faces define a guide passageway, each of said members having an inner cavity formed therein, respective notched blocks removably fitted to said cavities, plates secured to said blocks and bridging the notches therein, bearing studs supported jointly by said plates and said blocks, and antifriction rollers supported by said studs, the respective peripheries of said rollers extending inwardly beyond the inner guide faces of the respective members which mount the blocks.

2. A rolling mill of the character described, comprising coacting mill rolls, upper and lower stripper members movable relative to one another, the inner faces thereof defining a guide passageway, fixed members on which said strippers are fulcrumed, respective means operatively connected with the stripper members and tending to press their inner extremities into stripping coaction with the mill rolls, and respective upper and lower units detachably mounted in recesses formed in said stripper members, each of said units carrying bearing studs supporting guide rollers whose peripheries project beyond the respective inner guide faces of said guide members.

3. A rolling mill of the character described, comprising upper and lower stripper members whose inner faces define a guide passageway, each of said members having a recess formed in an upright edge thereof and respective demountable units comprising blocks shaped to fit in each recess, each unit including an antifriction roller whose periphery extends beyond the inner guide face of the respective member, and quickly detachable means for securing said blocks in said recesses.

4. The combination with the rolls of a rolling mill, of means for stripping the work fed therefrom comprising upper and lower stripper members defining a passageway terminating in the region of the nip of the rolls, an independent fixed fulcrum for each stripper member, respective means operatively connected with each stripper member tending to urge the inner extremity thereof into stripping engagement with one of said mill rolls, each stripper member having an undercut recess formed therein intermediate the fulcrum point thereof and its inner extremity, and quickly detachable blocks having oblique ends fitted in said recesses, each block having a respective pair of guide rollers journaled therein, the rollers of the upper insert being so positioned that the lower parts of their peripheries extend below the inner lower guide face of said upper gripper member, and the rollers of the lower block being so positioned that the upper parts of their peripheries extend above the inner upper guide face of said lower member.

RALPH F. KINTER.
ROBERT G. STEWART, SR.