L. M. EKSTRAND.

ROLLING MILL GUIDE.

APPLICATION FILED FEB. 19, 1921.

1,405,985.

Patented Feb. 7, 1922.

3 SHEETS—SHEET 1.

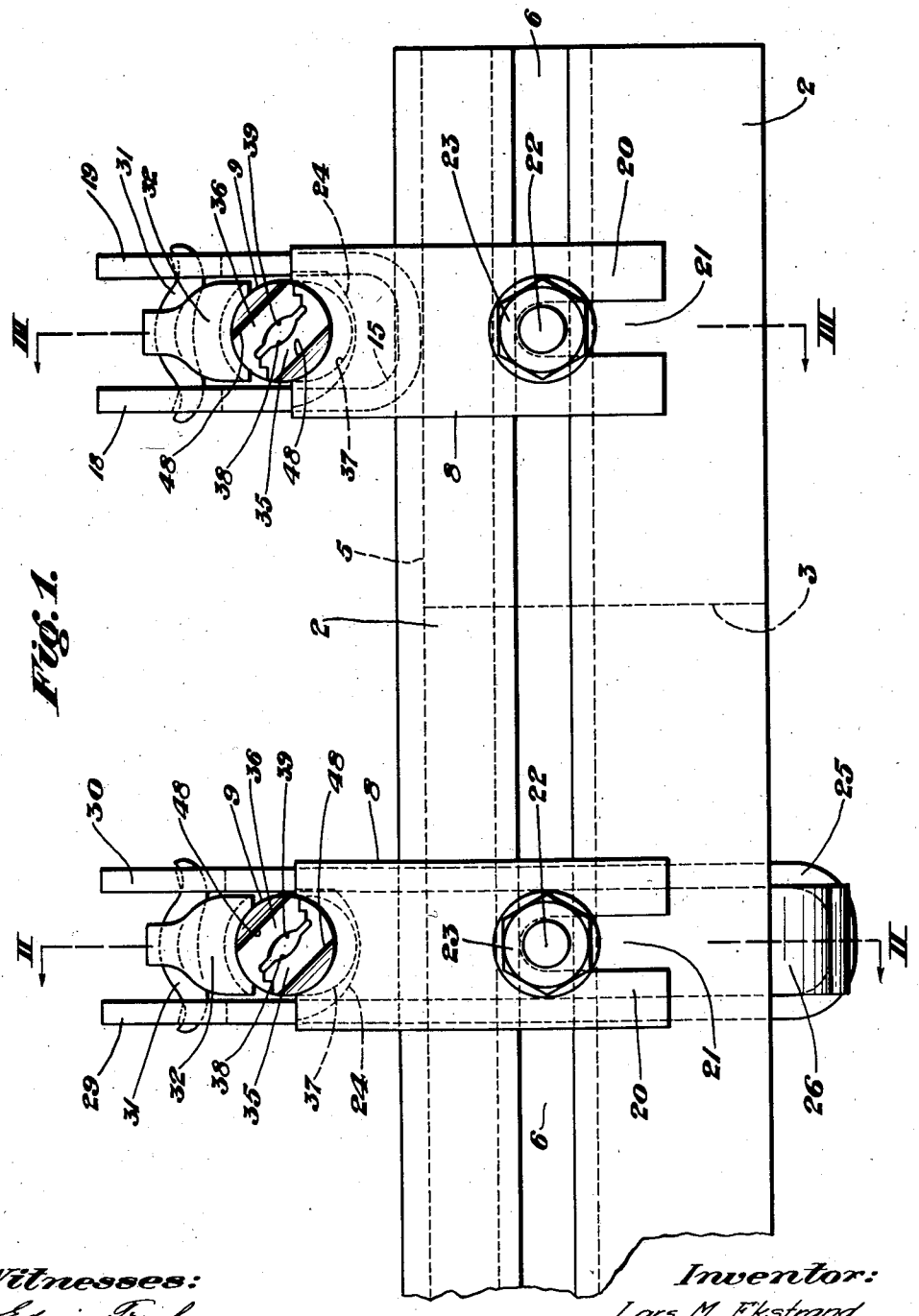


Fig. 1.

Witnesses:
Edwin Trieb

Inventor:
Lars M. Ekstrand.
by: D. Anthony Usina
his Attorney

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3 SHEETS—SHEET 2.

Fig. 2.

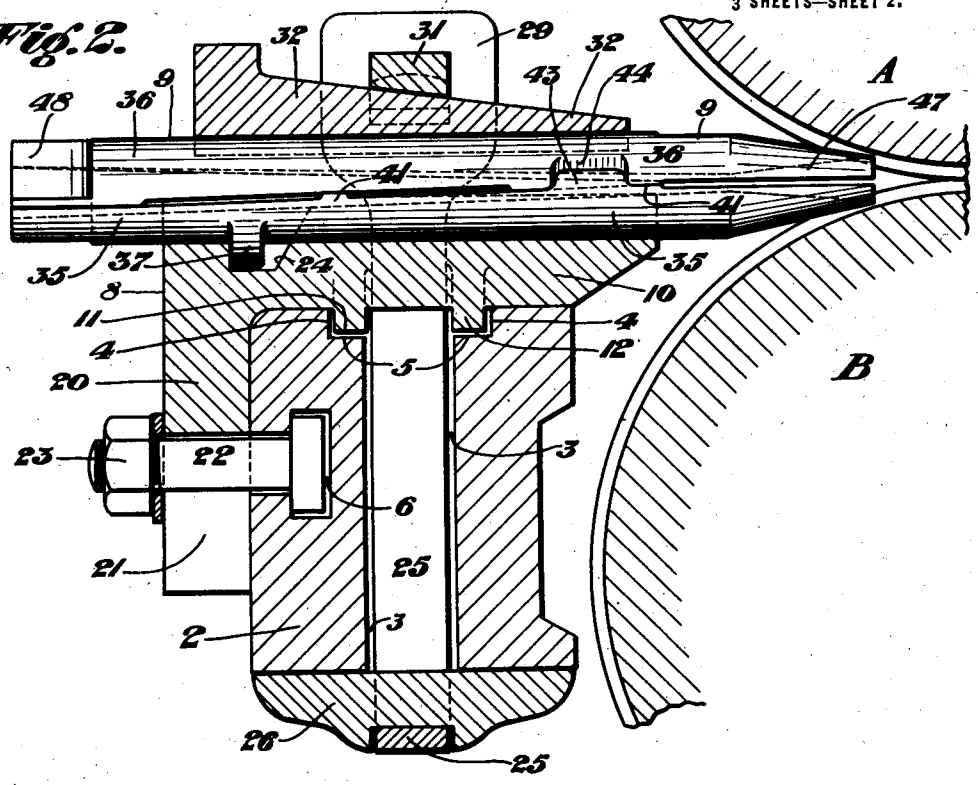
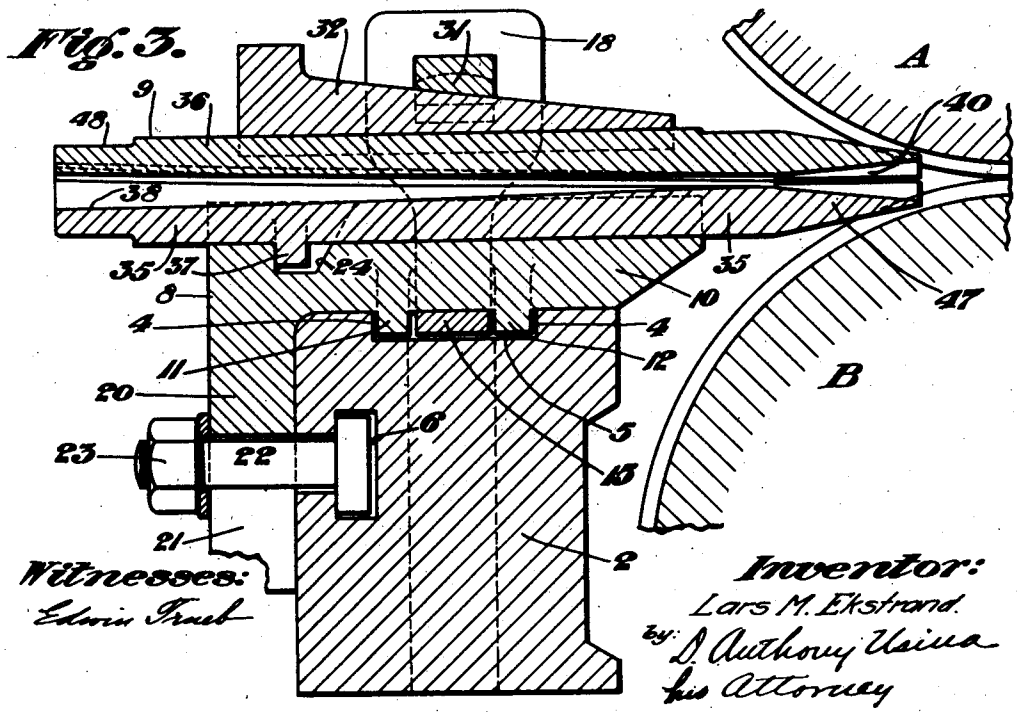


Fig. 3.



Witnesses:
Edwin Traub

Inventor:
Lars M. Ekstrand.
by: D. Anthony Usina
his Attorney

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3 SHEETS—SHEET 3.

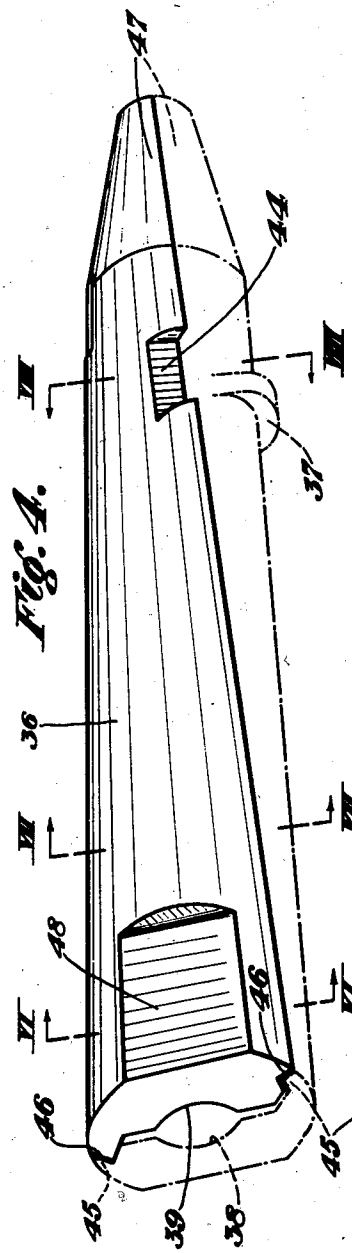


Fig. 4.

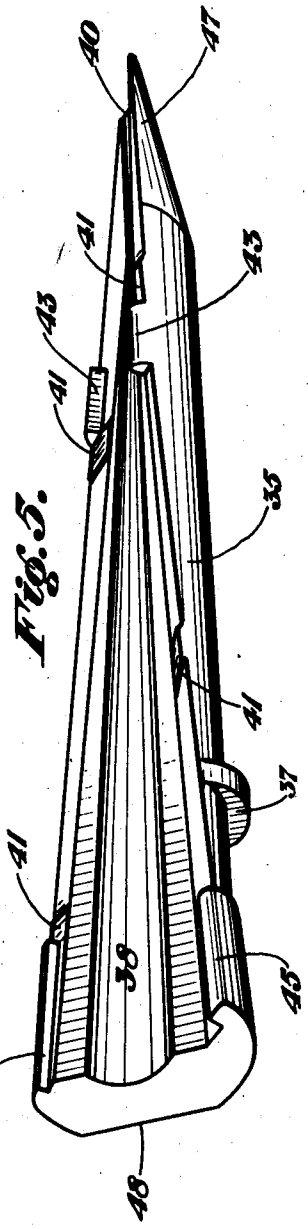


Fig. 5.

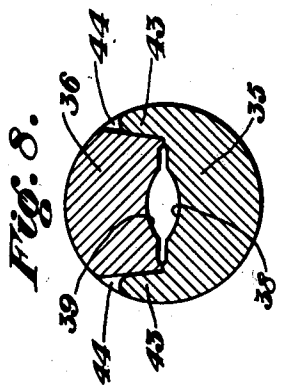


Fig. 8.

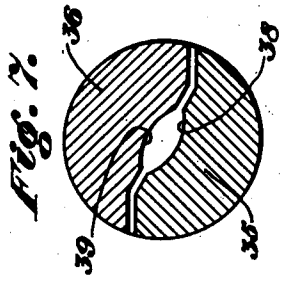


Fig. 7.

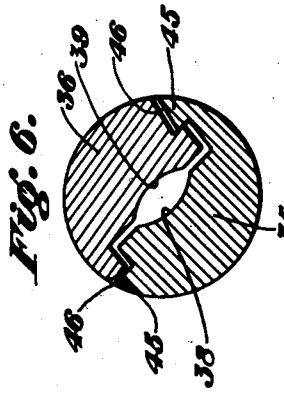


Fig. 6.

Witnesses:
Edwin Trust

Inventor:
Lars M. Ekstrand.
by: D. Anthony Usina
his Attorney

UNITED STATES PATENT OFFICE.

LARS M. EKSTRAND, OF WAUKEGAN, ILLINOIS, ASSIGNOR TO THE AMERICAN STEEL AND WIRE COMPANY OF NEW JERSEY, A CORPORATION OF NEW JERSEY.

ROLLING-MILL GUIDE.

1,405,985. Specification of Letters Patent. Patented Feb. 7, 1922.

Application filed February 19, 1921. Serial No. 446,214.

To all whom it may concern:

Be it known that I, LARS M. EKSTRAND, a citizen of the United States, and resident of Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Rolling-Mill Guides, of which the following is a specification.

This invention relates to rolling mill guides, and more particularly to guides used in rolling mills to guide bars or rods into the rolls, and has for one of its objects the provision of a twisted guide of this class that may be rotated in the guide box as the guide passage wears.

Another object of the invention is to provide means for allowing the escape of scale, water, and the like matter from the guide passage.

Another object of the invention is to provide improved means for holding the guide in the guide-box.

A still further object of my invention is to provide the novel arrangement, design, and combination of parts as hereinafter fully set forth in the following specification, and illustrated in the accompanying drawings, in which:

Figure 1 is a rear side elevation of a guide rest or cross bar having two guide-boxes and guides, constructed in accordance with this invention, mounted thereon.

Figure 2 is a sectional elevation on the line II—II of Figure 1.

Figure 3 is a sectional elevation on the line III—III of Figure 1.

Figure 4 is a perspective elevation of the twisted guide.

Figure 5 is a perspective elevation of the bottom half of the twisted guide.

Figures 6, 7, and 8 are sectional elevations of the twisted guide, respectively, on the lines VI—VI, VII—VII, and VIII—VIII of Figure 4.

Referring particularly to the drawings, the numeral 2 designates the cross-bar as a whole which is adapted to be bolted or otherwise secured to the housings of a stand of rolls and to support the guide-boxes and guides to which the invention is particularly directed.

The cross-bar 2 has a vertical longitudinally extending slot 3 extending therethrough, adjacent its center line and terminating short of each end. The bar 2 has its upper face cut away parallel with the slot 3 forming shoulders 4, and is further cut away from the ends of the slot 3 to the end of the cross bar forming a shallow flat bottom groove 5 at each end of the slot 3.

The cross-bar 2 also has its rear face cut away forming an under-cut groove 6 along its entire length for a purpose to be described.

A guide-box designated generally by the numeral 8 is mounted on the cross-bar 2 and supports a cylindrical guide designated generally by the numeral 9 in such manner that it may be rotated for adjustment.

The guide-box 8 comprises a body portion 10 adapted to extend transversely of the cross-bar and is provided on its bottom face with transversely extending spaced lugs 11 and 12 adapted to abut the shoulders 4 formed on the upper face of the cross bar parallel with the groove 3.

The body portion 10 of the guide-box is cut away between the lugs 11 and 12 forming a rounded bearing surface for a guide strap 15, which is substantially U-shaped and has its arms, which terminate in apertured ears 18 and 19, extending upwardly parallel with the sides of the body portion 10 of the guide-box. The strap 15 is adapted for use when the guide box is used adjacent the ends of the cross-bar or guide rest 2 beyond the slot 3 and above the flat groove 5.

The guide box 8 is provided with a tail portion 20 extending downwardly at right angles to the body portion 10 and having its lower portion cut away forming an open ended slot 21 adapted to fit around a bolt 22 having its head mounted within the undercut groove 6 and having a nut 23 thereon adapted to be screwed against the tail 20 and clamp the guide box in position.

The upper face of the body portion 10 of the guide-box is formed concave and is provided with a depression or socket 24 adjacent its one end for a purpose to be described.

A guide strap 25 is adapted for use with the guide-boxes when they are located on that portion of the cross bar provided with the slot 3 and is substantially U-shaped. The strap 25 is considerably longer than the strap 15 and has its closed or bottom end supported on a cross-bar clip 26 which bridges the slot 3. The arms of the strap 25 terminate in apertured ears 29 and 30 and extend

upwardly through the slot 3 and parallel with the sides of the body portion 10 of the guide-box 8.

The guide 9 is clamped against the guide-box 8 so as to be normally held against rotation by a clip 31 engaged in the apertured ears 18—19, and 29—30, of the straps 15 and 25, respectively, and a wedge 32 which is forced between the clip 31 and guide 9.

The guide 9 is of cylindrical contour, is mounted in the concave upper face of the guide-box 8 for rotary movement, and is composed of bottom and top sections 35 and 36, respectively. The bottom section 35 has a retaining lug 37 projecting downwardly therefrom adjacent the forward end of the section and adapted to fit within the socket or depression 24 in the guide-box 8.

The abutting faces of the sections 35 and 36 are each provided with a centrally twisted groove 38 and 39, respectively, said grooves co-operating with each other to form a twisted oval guide passage. The forward end of the grooves 38 and 39 are enlarged toward the forward end of the guide sections to form an enlarged bell-shaped entrance 40 to the guide passage.

Spacing lugs 41 are formed on the upper or abutting face of the bottom guide section 35 and serve to space the sections 35 and 36 apart forming escape passageways communicating with the guide passage to permit the escape of scale and water therefrom, during operation of the guide.

The bottom section 35 of the guide is provided with upwardly projecting locking lugs 43 along each side edge adjacent its forward end adapted to be engaged in co-operating recesses or depressions 44 in the upper section 36 of the guide. Other locking lugs 45 are provided adjacent the rear end of the bottom section 35 of the guide and project upwardly so as to be engaged in co-operating recesses or depressions 46 in the upper section 36 of the guide. The locking lugs 43—45 and their co-operating recesses 44—46 form a firm lock between the sections 35 and 36 of the guide against longitudinal movement one with the other.

The forward end of the guide is tapered forming a substantially conical nose 47 permitting the guide to be adjusted close into the pass between the rolls, which are designated in the drawings by the letters A and B.

The rear end of each of the sections is slightly flattened forming a tool grip 48 adapted to be gripped by a wrench or other such tool to turn the guide during operation.

The advantages of the improved guide, constructed in accordance with this invention, will be readily appreciated by those skilled in the art. My improved guide has its sections interlocked so as to maintain proper alinement. Provision is made for the escape of scale and water from the guide passage, thereby minimizing the wear on the passage, the bell-shaped mouth permits free entrance of the rod or article being rolled, and the guide is adjustable by rotating it in the guide-box during operation to take up wear of the guide passage.

This last named advantage is one of the most important since it prolongs the life of the guide, as it may be adjusted to different positions until the guide passage which is normally oval-shaped is worn substantially round.

Due to the use of forged steel guide straps the guide boxes are considerably narrower than heretofore used, and therefore, a larger number of guide-boxes and guides can be assembled on the cross-bar, thereby providing for the use of more passes in rolls of a given length than has been possible heretofore.

It will be understood that while an oval guide passage is shown in the construction of the drawings, other shapes may be readily used according to the shape of the rod or article being rolled.

While I have shown and described a particular embodiment of my invention, it will be expressly understood that I do not wish to be limited thereto since it is only illustrative, and various changes in design, arrangement and combination of parts will readily suggest themselves to those skilled in the art, and may be made without departing from the spirit of my invention, as defined in the appended claims.

I claim:—

1. The combination with a cross-bar, of a guide-box mounted on said cross bar, a guide mounted in said guide-box, a guide strap extending upwardly on each side of said guide-box, a clip engaging said strap, and a wedge between said clip and said guide for holding said guide rigidly in said guide-box.

2. In combination, a guide-box having a socket, a twisted guide mounted for rotation in said guide-box, a lug on said guide adapted to be engaged in said socket to prevent longitudinal movement of said guide, a guide strap extending upwardly on each side of said guide-box having apertures therein, a clip engaged in said apertures, and means engaging said clip and said guide for normally holding said guide against rotation.

3. A twisted guide member comprising a two-piece cylindrical member, lugs on one of said pieces interfitting in recesses in the other of said pieces to lock said pieces against longitudinal displacement one with the other, lugs on the abutting faces of said pieces for spacing said pieces apart, said pieces having centrally arranged co-operating twisted grooves in their abutting faces

forming a guide passage, said guide member having its one end squared for the reception of a tool for turning during operation.

4. A twisted guide comprising a two-piece member having a twisted guide passage extending longitudinally therethrough, and means for spacing said pieces apart forming transverse openings through said guide to allow the escape of water, scale and other matter from the guide passage.

In testimony whereof I have hereunto signed my name.

LARS M. EKSTRAND.