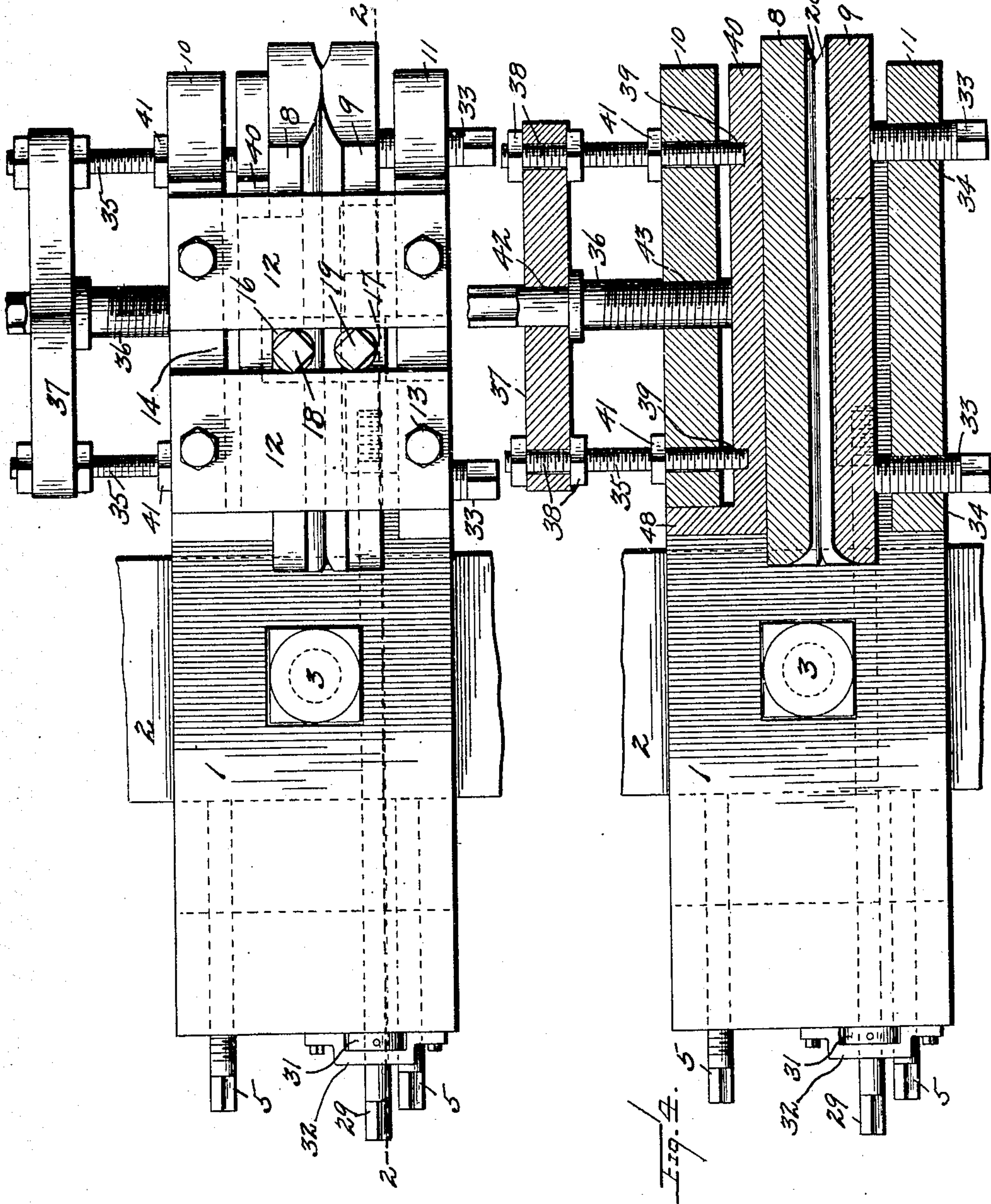


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 APPLICATION FILED MAR. 27, 1908.

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Patented Mar. 30, 1909.

2 SHEETS—SHEET 1.



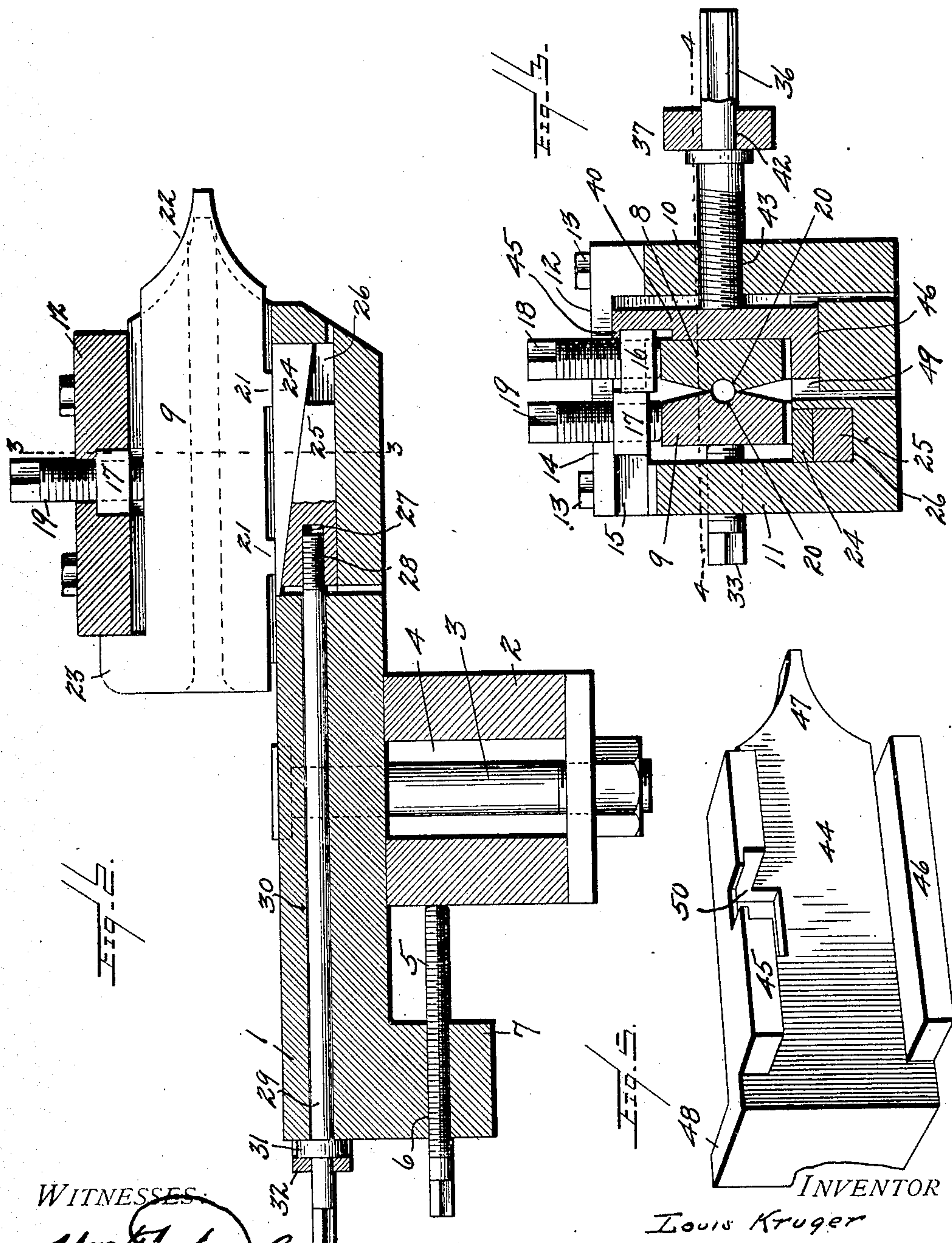
WITNESSES:  
*[Signature]*  
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 FIG. 1.

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# UNITED STATES PATENT OFFICE.

LOUIS KRUGER, OF YOUNGSTOWN, OHIO.

## ROLLING-MILL GUIDE.

No. 916,724.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed March 27, 1908. Serial No. 423,647.

*To all whom it may concern:*

Be it known that I, LOUIS KRUGER, a subject of the Emperor of Germany, (who has declared his intention to become a citizen of the United States,) residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Rolling-Mill Guides, of which the following is a specification.

This invention relates to the art of metal rolling, and more particularly to the guiding or feeding means for the material to be rolled.

To this end the invention contemplates a simple and practical construction of rolling mill guide so constructed as to insure a proper and direct feed of the material into the passes of the mill rolls, and possessing special utility as a guide for guiding the material or product into the passes of the rolls for the final or finishing operation. In this connection, the invention has particularly in view a construction of feeding-in guide for rolling mills embodying a plurality of simple, though advantageously arranged, adjusting devices, which provide means for accurately alining the guide as an entirety, and also the various elements thereof with reference to each other, and with reference to the roll passes. Also, the invention contemplates, in combination with the adjusting devices, means for securely holding the main guiding elements after having been once adjusted in proper relation to each other, and to the rolls.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the invention are susceptible to structural modification without departing from the scope thereof, but a practical and preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a plan view of a rolling mill guide constructed in accordance with the present invention. Fig. 2 is a vertical longitudinal sectional view on the line 2—2 of Fig. 1. Fig. 3 is a vertical transverse sectional view a short distance back of the line 3—3 of Fig. 2. Fig. 4 is a horizontal sectional view a short distance below the line 4—4, Fig. 3. Fig. 5 is a detail in perspective of the laterally adjustable guide carrier for one of the longitudinally arranged guide plates.

Like references designate corresponding parts in the several figures of the drawings.

The various operative parts of the improved guide are carried by a main base piece designated in its entirety by the numeral 1 of any suitable length or dimensions, though usually and preferably of a flat rectangular form so as to present a flat table portion over which the rod or other material passes when fed through the main guiding elements of the device. The said base piece is designed to be supported in a horizontal position in any suitable manner, but usually upon a supporting rest 2 preferably forming a part of the mill housing and adapted to receive a fastening bolt 3 also passing through the base piece 1. In the construction suggested, the supporting rest 2 is shown as provided with a bolt slot 4 accommodating the bolt 3 and admitting of sufficient lateral play for the bolt when loosened to permit the longitudinal adjustment of the base piece 1 by the base alining screws 5. These base alining screws are preferably mounted in the threaded screw openings 6 formed in the pendent alinement bracket or flange 7 provided at what may be termed the outer end of the base piece and arranged opposite one side of the rest 2 so that the screws 5 may be operated against said side of the rest to provide positive and practical means whereby the guide plates (to be referred to) may be accurately alined with the passage-way or passes of the rolls. It will be obvious that any suitable number of the alining screws 5 may be employed, as well as any number of the fastening bolts 3, without affecting the principle of construction or operation of the guide.

The main guiding elements of the guide consist of a pair of opposing longitudinally disposed guide plates 8 and 9 which are arranged in parallel relation and disposed longitudinally over one end portion of the base piece within an upstanding open guide casing carried by the base. This guide casing essentially consists of opposite upright side walls 10 and 11 arising from opposite side edges of the base, and a transverse casing top connecting said opposite side walls and preferably consisting of a pair of top cross bars 12 detachably fastened at their ends by means of screws, bolts, or equivalent fasteners 13, to the top edges of the side walls 10 and 11. The bars 12 of the open guide casing are arranged in spaced parallel relation



to provide therebetween a transverse bolt guiding slot 14 arranged in said casing top, and the inner longitudinal edges of the bars 12 next to said slot are provided with longitudinal undercut rabbets or grooves 15 opening through one end of the bars at one side of the casing and constituting nut seats for the holding nuts 16 and 17 of the top binding bolts or bolt screws 18 and 19, which respectively bind on the top edges of the guide plates 8 and 9 and serve to lock or fasten the latter securely in position after the same have been properly adjusted both vertically and laterally by the means to be presently described. As will appear from the drawings, the binding screws 18 and 19 extend up through the top slot 14, and when loosened up, the same, with their nuts 16 and 17, can be readily slid laterally in and out of position, as may be most clearly seen from Fig. 3 of the drawings.

Reverting to the opposing guide plates 8 and 9, it will be observed that each of the same essentially consists of a rectangular plate body or block provided in its inner face with a longitudinal guiding groove or channel 20 extending throughout the entire length of the plate practically at the transverse center thereof, and when the two guide plates are placed together in side by side relation within the open guide casing therefor, the opposite grooves 20—20 register and provide an inclosed guide opening or passage through which the metal bar or rod is fed to the mill rolls. While in the drawings the said closed guide opening or passage is shown to be of circular form, it will be obvious that the individual grooves or channels 20 can be of any desired shape so as to form a square, oblong, or other cross sectional design of opening to correspond with the shape of the bar being fed into the rolls. The said plates 8 and 9 are also preferably provided at their lower edges with rest projections 21, at their inner ends next to the rolls with a tapered nose 22 to fit the space at the feeding-in side of the rolls, and at their opposite or outer ends with upstanding guard lugs 23 to bear against the guide casing and hold the plates against longitudinal displacement toward the rolls.

To provide for proper registration of the guiding grooves of the two plates, a definite vertical adjustment for one of said plates (9) is provided for through the medium of a wedge adjusting device. The latter is shown as consisting of a pair of complementary inversely arranged and matching wedge blocks 24 and 25 arranged in a housing pocket 26 formed in the floor of the base 1, and the uppermost of which wedges 24 forms the support on which rests the guide plate 9. The wedge 25 is provided with a threaded socket 27 receiving the inner threaded extremity 28 of an adjusting rod 29

turning in a rod opening 30 formed in the base and carrying at its outer end portion a retaining ring or collar 31 arranged inside of a bearing bracket 32 fitted to one end of the base and serving to hold the rod 29 against longitudinal movement. The lateral adjustment for the same guide plate (9) is preferably provided for by a pair or more of the lateral adjustment screws 33 working in threaded openings 34 in one of the side walls 11 of the guide casing. The corresponding adjustment for the other guide plate 8 is accomplished by means of the main lateral adjuster which essentially consists of a pair of draw rods 35, a central adjusting screw 36, and a cross head 37 connecting the latter with said rod. The rods 35 are preferably detachably and adjustably connected with opposite ends of the head 37 by means of what may be termed bolt and nut connections 38, and the inner ends of said rods are threaded or otherwise secured, as at 39, to opposite end portions of a laterally adjustable guide carrier 40 for the guide plate 8. The rods 35 are preferably threaded and accommodate thereon the jam nuts 41 binding against the outer side of the guide casing to secure the adjuster fast when the proper adjustment of the carrier 40 has been effected. The central adjusting screw 36 is swiveled at its outer end portion as at 42 in the center part of the cross head 37 and its inner end portion engages in a threaded opening 43 extending through the side wall 10 of the casing. From this construction, it will be obvious that, with the nuts 41 loosened, the turning of the screw 36 will necessarily carry the rods 35 in or out with the result of providing just the lateral adjustment needed for the carrier 40 within which the guide plate 8 is loosely placed in an upright position.

The laterally adjustable guide carrier essentially consists of an open-sided holder box consisting of an upright body plate 44 provided with the laterally projecting upper and lower holding flanges 45 and 46 respectively, and also provided at one end with a tapered roll clearance nose 47, and at the opposite end with the right angularly arranged guard flange 48 engaging one end of the guide casing to prevent longitudinal movement of the carrier 40 toward the mill rolls. The lower flange 46 of the carrier 40 is slidably held in a guiding seat 49 provided in the floor of the base 1, as shown in Fig. 3 of the drawings. Also, the upper flange 45 is preferably provided with a cutaway rabbeted clearance hole 50 to accommodate the screw and nut 18 and 16 for the guide plate 8.

From the foregoing it is thought that the construction, and operation of the various parts for registration and alinement purposes will be readily understood by those familiar with the art without further description, and it will also be understood that various



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

5 I claim:

1. In a rolling mill guide, a base having a guide casing, a pair of opposing guide plates arranged within the casing, an open guide carrier loosely receiving one of the plates and  
10 slidably seated in the guide casing, a main lateral adjuster cooperating with said carrier, lateral adjustment means cooperating with the opposite guide plate, and fastening means for securing both guide plates.

15 2. In a rolling mill guide, a base having a guide casing, a pair of opposing guide plates arranged within the casing, a laterally adjustable guide carrier loosely receiving one of the guide plates and consisting of an open-  
20 sided box having upper and lower flanges and means for preventing longitudinal movement thereof toward the rolls, a main lateral adjuster cooperating with said carrier, lateral adjustment means cooperating with the  
25 opposite guide plate, and fastening means for securing both guide plates.

3. In a rolling mill guide, a base having a guide casing, opposing guide plates arranged within the casing, a guide carrier for one of the plates loosely mounted in the casing, a  
30 main lateral adjuster consisting of a cross head, a pair of draw rods coupled to said head and connected to said carrier, and an adjusting screw swiveled to the cross head and engaging a threaded opening in the cas-  
35 ing, lateral adjustment means for the opposite guide plate, and fastening means for securing both guide plates.

4. In a rolling mill guide, a base having a guide casing, a pair of opposing guide plates  
40 arranged within the casing, a carrier for one of said plates a main lateral adjuster cooperating with said carrier for one of said plates, vertical adjustment means cooperating with the opposite guide plate, and fastening means  
45 for securing both guide plates.

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

LOUIS KRUGER.

Witnesses:

HERMAN BRANDMILLER, Jr.,  
ALBERT COOPE.