

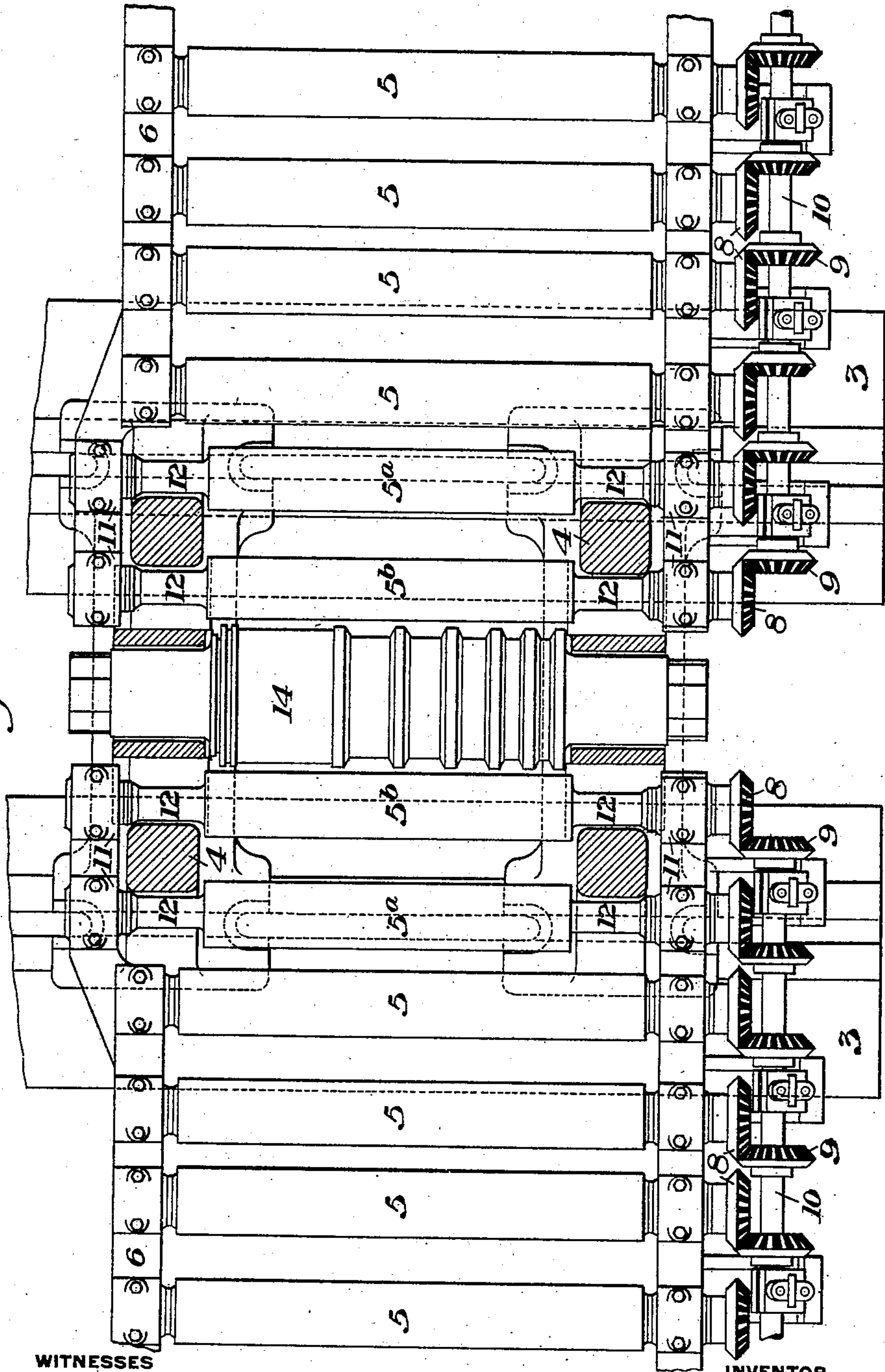
915,014.

F. C. BIGGERT, JR.
ROLLING MILL.
APPLICATION FILED JUNE 18, 1908.

Patented Mar. 9, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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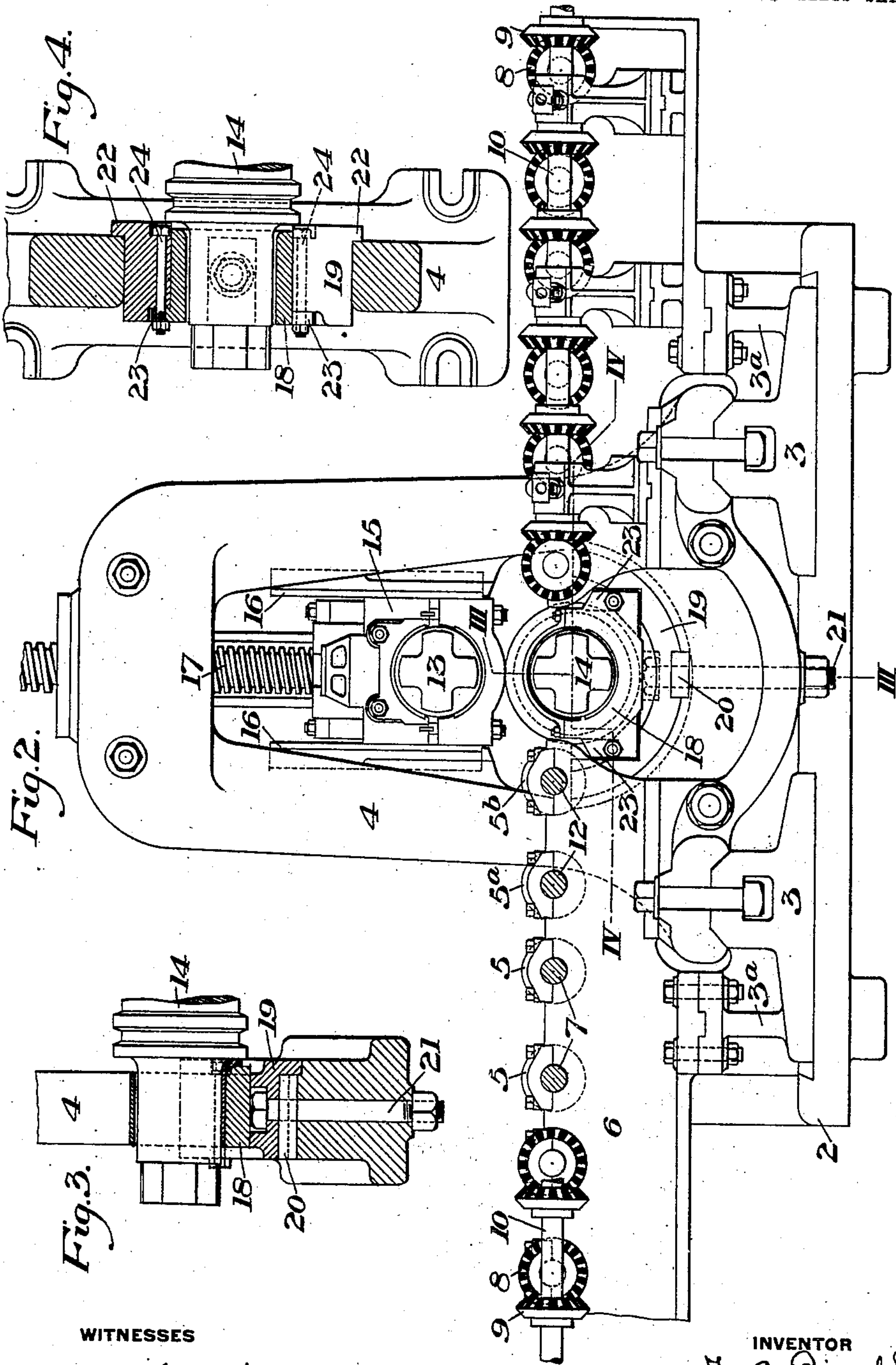
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UNITED STATES PATENT OFFICE.

FLORENCE C. BIGGERT, JR., OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO UNITED ENGINEERING & FOUNDRY COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

ROLLING-MILL.

No. 915,014.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed June 16, 1908. Serial No. 438,769.

To all whom it may concern:

Be it known that I, FLORENCE C. BIGGERT, Jr., of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Rolling-Mill, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view, with the roll housings in horizontal section, of a rolling mill embodying my invention, the end portions of the tables being broken away; Fig. 2 is a side view of the same with certain parts in section; and Figs. 3 and 4 are detail views taken respectively on the lines III—III and IV—IV of Fig. 2.

My invention has relation to rolling mills, and more particularly to the construction and arrangement of the roller tables and table rolls and to the manner of journaling the lower mill roll.

Heretofore in rolling mills in which it has been necessary to bring the rollers of the roll table up nearly to the bite of the mill rolls, it has been necessary to journal the last one or two rollers of each table in the roll housings. This practice has been open to a number of serious objections. In the first place, it has been necessary to provide openings in the roll housings through which the necks of the last roll of each table have been extended. In order to permit the removal of these rollers, these openings have necessarily been made of sufficient size to permit the rollers being removed endwise therethrough. This weakens the roll housing to a considerable extent, and in case the rollers become seriously bent it has been impossible to remove them without practically dismantling the mill. In the second place, a special arrangement of the driving gear has been necessary for the last two rolls of each table, and great trouble has been experienced in keeping this gearing in proper working condition, owing to the fact that the last two rollers of each table being supported in the housing and independently of the table frame are subjected to the movements of the roll housings as well as to the blows of the pieces being rolled, thereby tending to throw the gears out of line or break them.

My invention is designed to overcome these difficulties by so arranging the table frames and roll housings, that all of the

table rollers can be journaled in the table frame and can be driven from the line shafts which drive the series of table rollers of each table; also to so arrange the last two rollers in each table that they can be readily removed and replaced; also to provide an improved construction and arrangement of bearings for the lower mill roll.

The precise nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown one embodiment thereof, and which will now be described, it being premised, however, that the invention is capable of various modifications in the details of construction and arrangement by those skilled in the art without departing from the spirit and scope of my invention as defined in the appended claims.

In the drawings, the numeral 2 designates the tie plate of the mill, and 3 the usual shoe plates held together transversely by the tie plate 2.

4 designates the end housings of the mill, which are in general of the ordinary construction, but which, in the construction shown, have their legs downwardly tapered, and having their points of least thickness or width at about the plane of the rollers of the roll tables. This tapering of the legs is however not material.

6 designates the side rails or girders of the table frames, and in or upon which the rollers 5 are provided with the usual bearings, said rollers having extended necks 7 at one end to which are secured driving pinions 8, the teeth of which are engaged by bevel pinions 9 on the usual line shafts 10. The side rails 6 are preferably bolted to arms or brackets 3^a of the shoe plates 3. The table frames and the manner of supporting and driving the rollers are in general of the usual character, but in accordance with my invention each of the side rails or girders 6 is extended past the outer side of the adjacent housing leg, being provided at such extensions with bearings 11 for the last two rollers 5^a and 5^b of the tables. These last two rollers of each table are arranged in the manner clearly shown in Figs. 1 and 2. Each of these rollers is provided with extended reduced necks 12 at each end, the necks of the roller 5^a extending past the outer edges of the adjacent housing legs, while the necks of the roller 5^b extend past the inner edges of said legs, so that the necks

of the two rollers straddle the legs of the housings. In order to make it unnecessary to increase the lengths of the necks thereof, I preferably provide the rails 6 at the side of the table opposite the line shafts 10 with the laterally offset extensions 6^a which are provided with the bearings 11 for the necks of the rollers 5^a and 5^b.

13 designates the upper mill roll, 14 the lower roll, 15 the bearing blocks for the upper roll which are movable vertically in the guides 16 of the housings, and 17 is one of the screws of the usual screw-down mechanism for the upper roll. The lower roll 14 is journaled in bearings 18, which are seated in pillow blocks 19. One of these pillow blocks is seated in the lower portion of each of the housing windows, in which it is secured by the key 20 and the bolts 21. Each of the pillow blocks is provided with a flange 22 at its inner end, which engages the inner side of the housing and thus holds the block against outward movement. The bushings or bearings 18 are held in these pillow blocks in any suitable manner. As shown in Fig. 4 they are provided with flanges 23 at their outer ends, through which extend the bolts 24, which also extend through the pillow blocks to the inner sides thereof.

The advantages of my invention will be apparent to those skilled in the art, since it provides an arrangement whereby all of the rollers of each of the tables can be supported and journaled in the table frames and driven by direct connection with the line shafts, from which the other rollers are driven. The entire table is thus rendered independent of the roll housing, so that the shocks and strains of the table are not communicated to the housings, nor are those received by the housings communicated to the table. The end rollers 5^a and 5^b of each table can be readily removed, the rollers 5^a being removable at the sides of the housings, while the rollers 5^b can be removed from the housing windows. The lower mill roll is also readily removable through the housing window.

I do not wish to restrict myself to the precise construction and arrangement of the parts, as I have herein shown and described, as they can be modified and changed in

many ways within the scope of my invention as defined in the appended claims.

I claim:—

1. In a rolling mill, the combination with a roll housing of a roll table having side members extended past and outside of the lower portion of the housing leg, and table rollers journaled in said side members one at each side of said leg, at least one of said rollers extending through the windows of the housing; substantially as described.

2. In a rolling mill, a roll housing having legs of decreasing width toward the lower end of the housing, said legs decreasing in width at their inner sides and table rollers straddling said legs and journaled independently of the housing; substantially as described.

3. In a rolling mill, the combination with a roll housing and a roll table having side members extended past the said legs and provided with bearings for a table roller at each side of the leg and table rollers straddling the leg and journaled on said side members, one of the rollers extending through the windows of the housing; substantially as described.

4. In a rolling mill, the combination with a roll housing of a roll table having side members extended past and outside of the lower portion of the housing leg, a series of rollers journaled in said side members, the last two rollers of the series being journaled respectively at opposite sides of the housing leg, and a driving shaft for the rollers having a direct gear connection with each of the rollers; substantially as described.

5. In a rolling mill, the combination with roll housings of a table frame supported independently of said housings and having bearings for table rollers at each side and outside of the housing legs and table rollers straddling the housing legs and journaled in such bearings; substantially as described.

In testimony whereof, I have hereunto set my hand.

FLORENCE C. BIGGERT, JR.

Witnesses:

GEO. H. PARMELEE,
H. M. CORWIN.