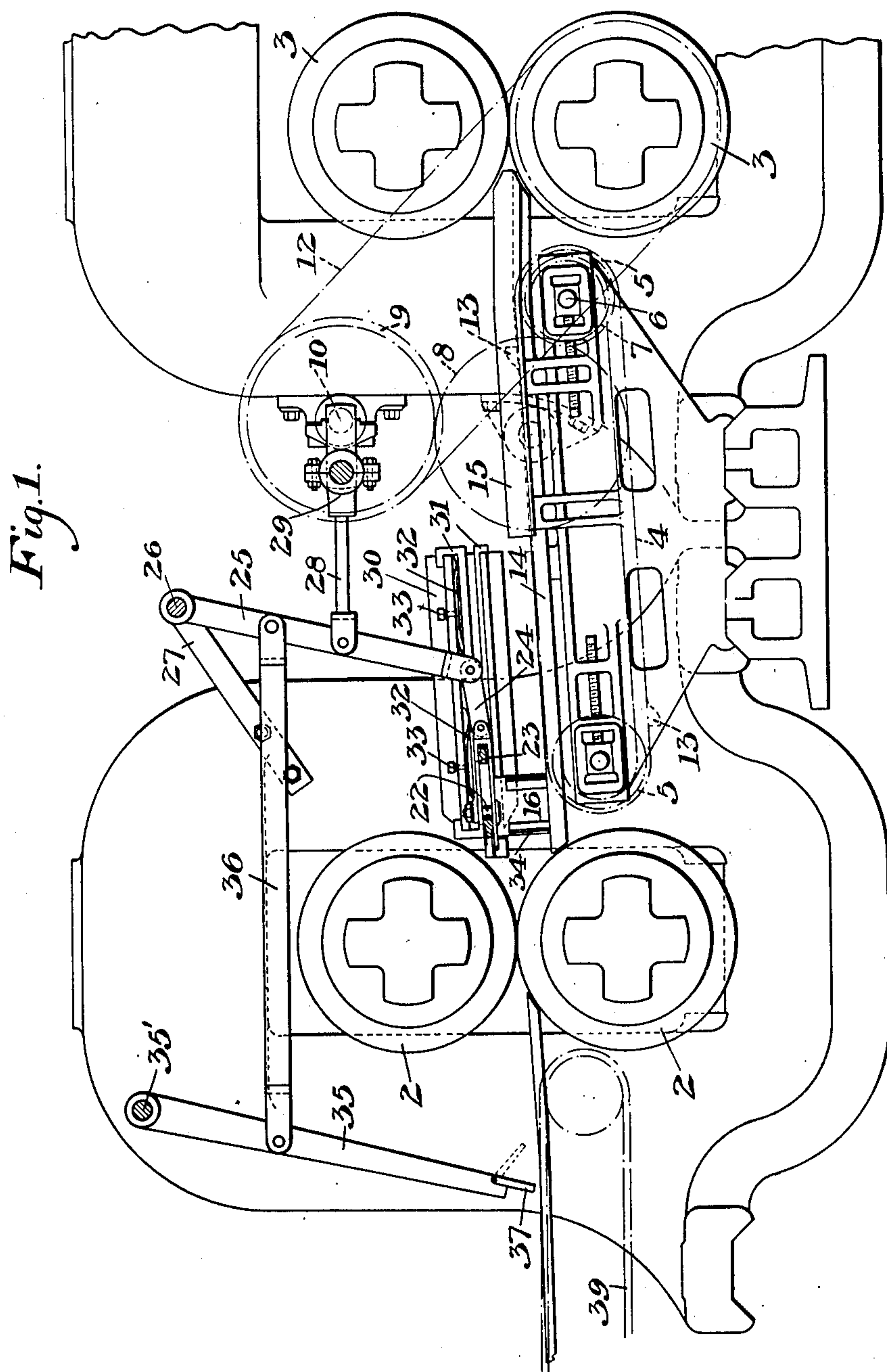


No. 887,582.

PATENTED MAY 12, 1908.

C. W. BRAY & J. PEAT.  
ROLLING MILL FEED MECHANISM.  
APPLICATION FILED MAY 22, 1903.

2 SHEETS—SHEET 1.



WITNESSES

Thomas W. Baxendale  
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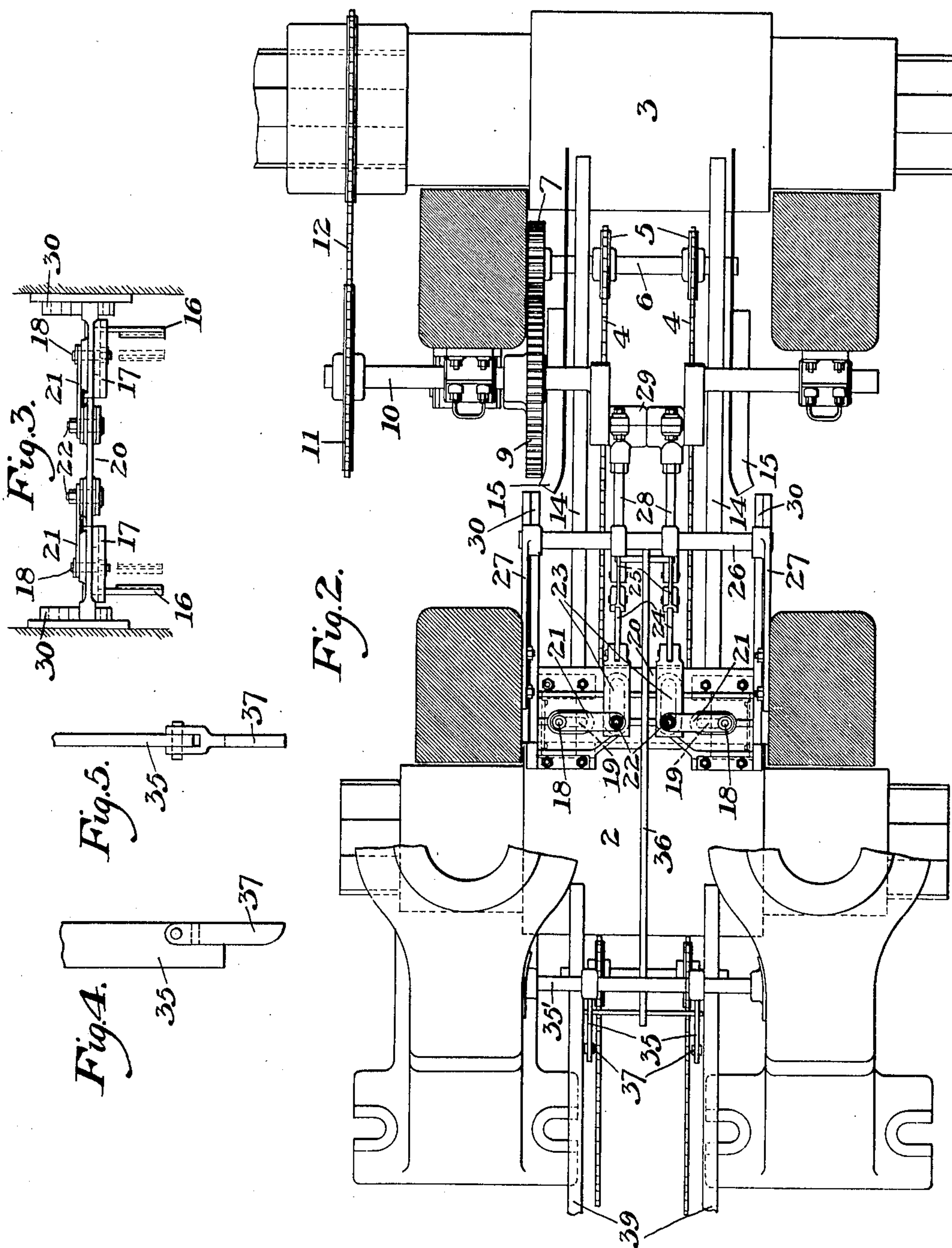
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2 SHEETS—SHEET 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

CHARLES W. BRAY AND JAMES PEAT, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS TO  
AMERICAN TIN PLATE COMPANY, A CORPORATION OF NEW JERSEY.

## ROLLING-MILL FEED MECHANISM.

No. 887,582.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed May 22, 1903. Serial No. 158,220.

*To all whom it may concern:*

Be it known that we, CHARLES W. BRAY and JAMES PEAT, both of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Rolling-Mill Feed Mechanism, 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 sectional side elevation of our improved feed mechanism; Fig. 2 is a top plan view of the same, and Fig. 3 is an end elevation showing the guides and slide connections, and Figs. 4 and 5 are detail views.

Our invention relates to the feeding of plates, such as tin plate bars, which as they issue from the rolls are too short to be received directly upon an ordinary feed table; and the object of the invention is to provide means for positively moving such plates forward to and from the rolls.

In the drawings, 2, 2 represent a set of rolls of a continuous mill, and 3, 3 a succeeding set arranged in tandem therewith. Between these sets of rolls is a feed-table which we have shown as having endless sprocket-chains 4, 4 movable over end sprocket-wheels 5, the shaft 6 of one pair of wheels having at one end a pinion 7 engaging a toothed wheel 8, intermeshing with the upper toothed wheel 9 mounted on a shaft 10 carrying an end sprocket-wheel 11 driven by a sprocket chain 12 from the shaft of the lower roll 3.

The chains are provided with pairs of fingers or upwardly projecting lugs 13, of which we have shown two pairs, so that at each revolution of the chain two plates will be positively forced forward into the bite of the rolls 3. The fingers slide the plates or bars forwardly over the horizontal table-guides 14, and bell-mouthed side guides 15 are also preferably used leading to the bite of the rolls 3, in order to keep the plates square as they enter.

As the plates or bars emerge from the rolls 2 they drop upon the guide 14; and to positively feed them forward to a position where they will be engaged by the chain fingers, we provide opposite grippers 16. These grippers depend from slides 17 secured to the lower ends of pins or bolts 18 which extend through slots 19 in a longitudinally moving slide 20 which extends across the space between the roll housings. The slots 19 ex-

tend toward each other across the slide 20 and to their pins 18 are pivoted the links 21, the inner ends of which are pivoted to pins 22 which extend through the ends of forked slides 23 embracing the slide 20. The plate or slide 20 is provided with slots to receive the pins 22, which slots are at an angle, preferably a right angle, to the slots 19. The slides 23 are connected by links 24 to the lower ends of levers 25 pivoted at their upper ends to a rock-shaft 26, pivoted in end brackets 27 mounted on the housings. These levers are oscillated by links 28 connecting their intermediate portions to a crank 29 upon the shaft 10, which is driven from the roll 3.

The main slide 20 is carried in guideways 30 secured to the inner faces of the housings of rolls 2 and moved between brass liners 31. The upper of these liners is pressed down yieldingly by springs 32, the tension of which may be adjusted by set-screws 33. The friction of the main slides may thus be adjusted to regulate the gripping pressure upon the ends of the plate or bar. The grippers 16 are preferably provided with vertically extending knives or sharp edges 34 of steel or suitable material.

For feeding the plates positively to the rolls 2, 2, we employ swinging levers 35, pivoted at 35' and oscillated by a link 36. These levers carry at their lower ends pivoted gravity catches 37, each of which is capable of a forward pivotal motion, as shown by dotted lines, but is stopped from backward motion by engagement with the lever.

The plates are delivered by the usual conveyor 39 within the range of motion of the levers 35, and as these levers swing back the catches 37 slip idly over the plate, but in their forward motion they engage the rear edge of the plate and move it forward positively into the bite of the rolls. As the levers on both sides of the rolls reciprocate together they do not interfere with each other, and the piece is delivered from the rolls as the levers 25 are receding. As the feeding levers are transmitting the preceding piece toward the second set of rolls.

The parts are so timed that after the plate has been delivered by the rolls 2, the grippers will seize it and move it forward just after one set of fingers has passed the grippers in moving the preceding bar forward; and at



this time the rocking of the levers 25 by means of the crank-shaft will exert a pull upon the forked slides 23. This pull will tend to pull the grippers toward each other and also to pull the main slides 20 forwardly; and by regulating the friction between the edges of this slide and its guideways, we can regulate the gripping pressure so that the grips will be drawn toward each other and engage the side edges of the bar before the main slide begins to move. The further movement of the levers pulls the main slide forwardly, thus carrying the bar forward until it is in a position to be engaged by the other set of chain fingers. The crank-shaft then moves the levers back and first opens the grips which move back to their normal inoperative position, and then pushes the main slide back to its normal position ready to engage the next bar as it emerges from the rolls 2.

The advantages of our invention result from the supplemental mechanism for positively engaging and forcing the bar forward to the driven feed mechanism. In the form shown, the grippers also square up and center the plate; and the movements are automatic and are carried out without hand control.

Many changes may be made in the form and arrangement of the supplemental feed mechanism, as well as the main feed table, without departing from our invention.

We claim:

1. The combination with rolls, of a transfer device, grippers arranged to engage opposite side edges of the metal, and mechanism for moving the grippers bodily with the metal to move the latter to the action of the transfer device; substantially as described.

2. The combination with rolls, of a delivery table at the receiving side thereof, grippers arranged to engage the side edges of the metal after it has left the rolls, means for moving said grippers horizontally toward and from each other, and means for moving the grippers forwardly to carry the metal and grippers bodily away from the rolls toward the delivery table; substantially as described.

3. The combination with rolls, of pushers on the entry side thereof, and positive reciprocating receiving mechanism on the receiving side thereof, said mechanisms being connected to act in a certain time relation to each other; substantially as described.

4. The combination with a pair of rolls, of a positively driven receiving table on its exit side, and reciprocating feeding mechanism between the receiving table and the rolls for carrying the metal from the rolls to the action of the receiving table; substantially as described.

5. The combination with rolls, of a positively driven feed table leading from their

exit side, grippers arranged to engage the metal emerging from the rolls, and mechanism arranged to actuate the grippers and move them with the metal forwardly to the feed table; substantially as described.

6. The combination with rolls, of a positively driven feed table leading therefrom, and mechanism arranged to move the metal to the feed table, said mechanism comprising grippers mounted upon a support, means for opening and closing the grippers, and means for moving the support back and forth; substantially as described.

7. The combination with rolls, feeding mechanism at the entry side thereof, a table leading from the rolls, and mechanism intermediate the rolls and table for moving the metal to the table, and actuating connections for the intermediate mechanism and for the feeding mechanism, said connections being common to both mechanisms and being arranged to cause the operation of the two mechanisms in a certain time relation to each other; substantially as described.

8. The combination with rolls, of a stationary carrier table leading therefrom, and mechanism for transferring the metal from the rolls to the carrier, said mechanism having means for gripping the sheet, actuating connections for moving the gripping means bodily with the sheet and then release the sheet and return the gripping means; substantially as described.

9. The combination with rolls, of a stationary carrier table, mechanism for transferring the metal from the rolls to the carrier, said mechanism having means for gripping the side edges of the metal, mechanism for moving the gripper bodily with the metal, feeding mechanism for the rolls, and connections between the feeding mechanism and the transfer mechanism whereby they are operated in time relation to each other; substantially as described.

10. The combination with a pair of rolls, of a positively-driven table at the receiving side of the rolls, supplementary mechanism for moving the metal to the said table after it has left the rolls, said mechanism having grippers arranged to grasp opposite side edges of the sheet moved, and connections for actuating the supplementary mechanism; substantially as described.

11. The combination with a pair of rolls, of a positively-driven feed table at the receiving side of the rolls, a supplementary mechanism for moving the metal to said table, said mechanism comprising grippers, laterally movable slides carrying the grippers, a reciprocating main slide upon which the first-named slides are mounted, and means for actuating said slides; substantially as described.

12. The combination with rolls, of a positively driven feed table leading from the



rolls, grippers arranged at the receiving side of the rolls and arranged to engage the opposite edges of the metal, and mechanisms for opening and closing the grippers and for  
5 moving them bodily forward with the metal, to carry the metal to the action of the table; substantially as described.

13. Mechanism for transferring short pieces of metal, comprising rolls, grippers at the  
10 receiving side of the rolls arranged to engage opposite edges of the metal, and mechanism for actuating said grippers to cause them to

grasp the metal and move forwardly with it, and a carrier which receives the metal from the grippers and carries it forwardly; substantially as described.

In testimony whereof, we have hereunto set our hands.

CHARLES W. BRAY.  
JAMES PEAT.

Witnesses:

JOHN MILLER,  
H. M. CORWIN.