

No. 844,419.

PATENTED FEB. 19, 1907.

E. E. SLICK.  
FEEDING DEVICE FOR ROLLING MILLS.

APPLICATION FILED NOV. 29, 1905.

4 SHEETS—SHEET 1.

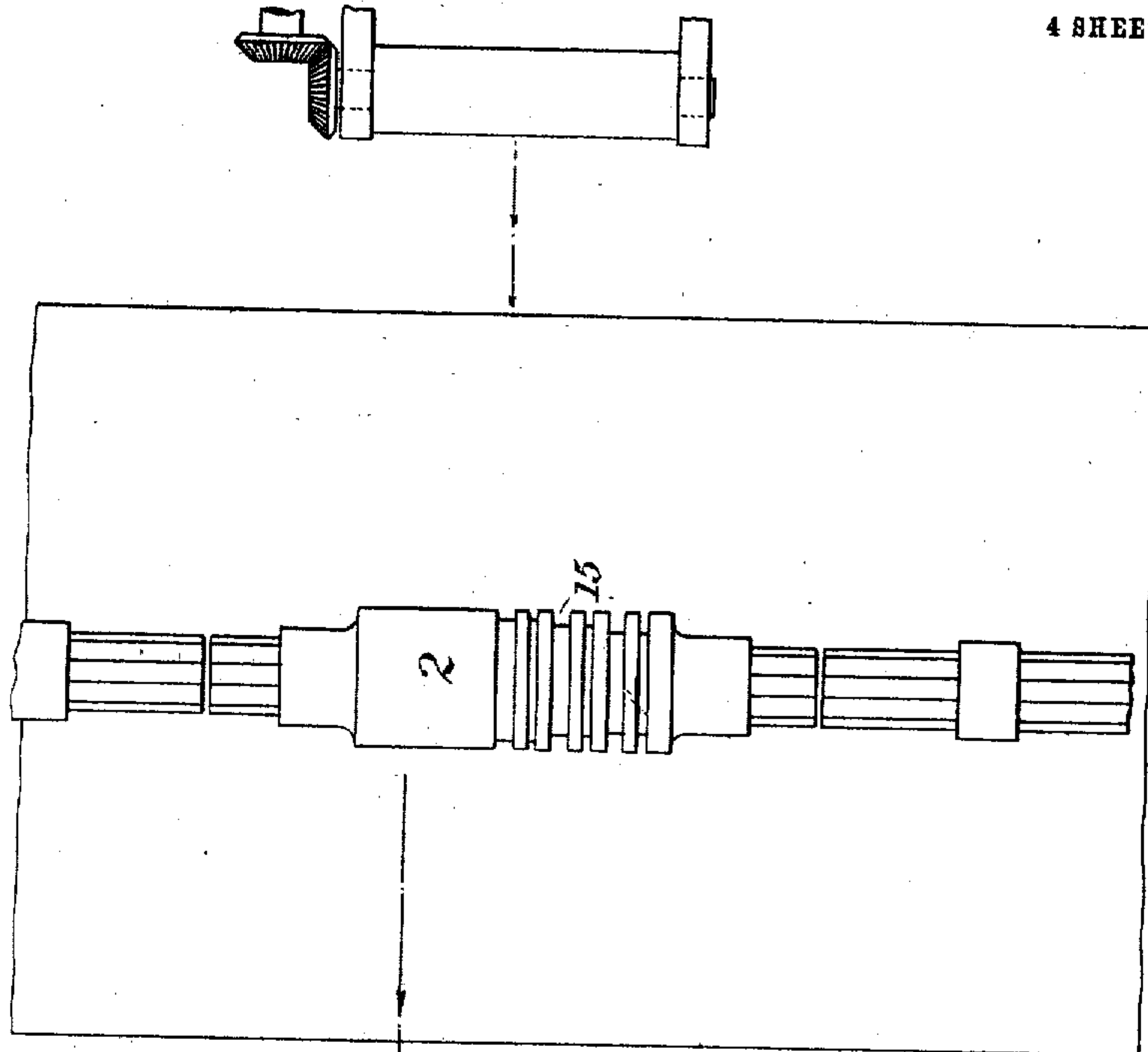
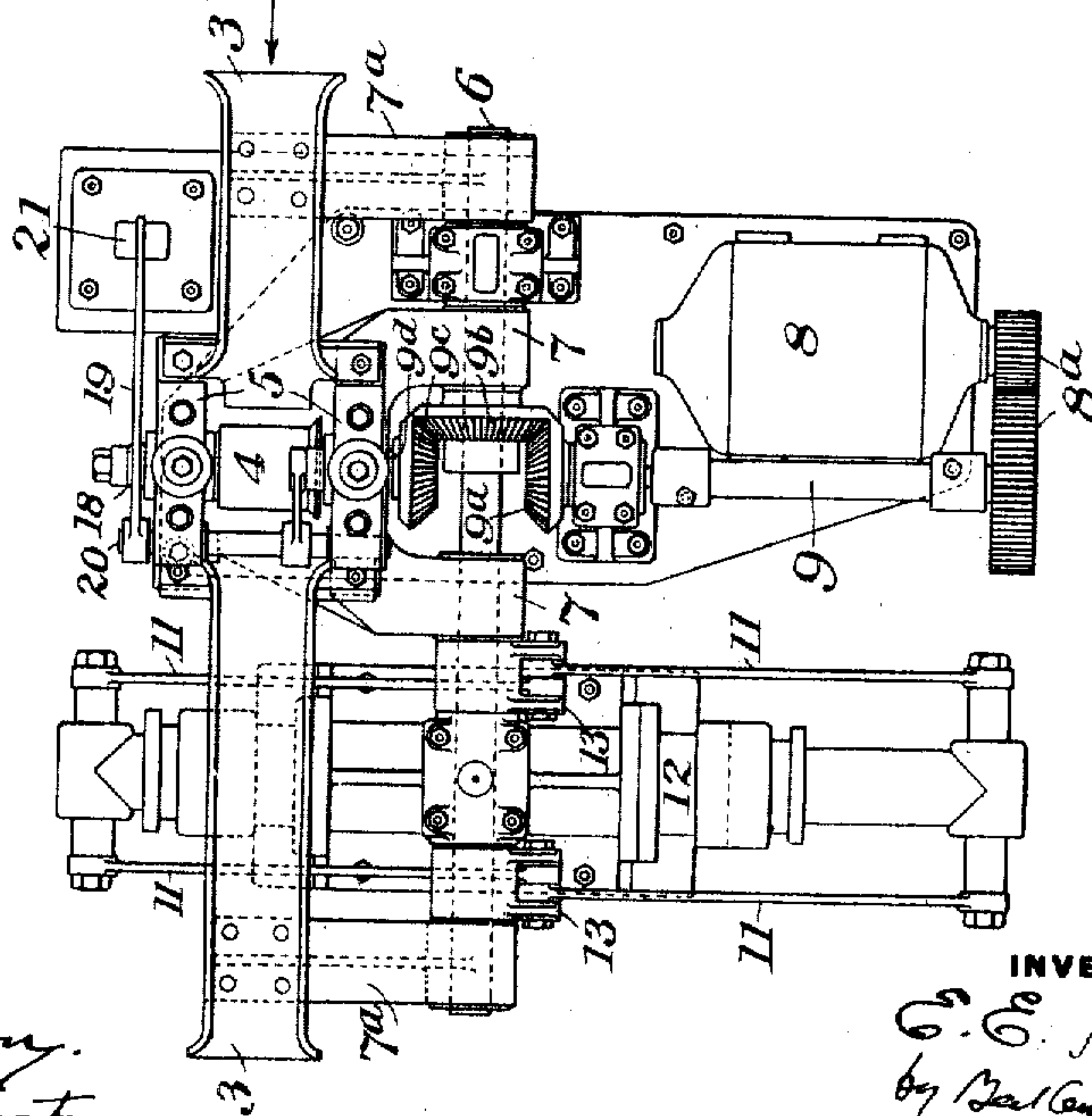


Fig. 1.



WITNESSES

*R. A. Baldwin*  
*Warren W. Swartz*

INVENTOR

*E. E. Slick*  
*by B. A. G. & R. J. S. Rymen*  
*his attys*

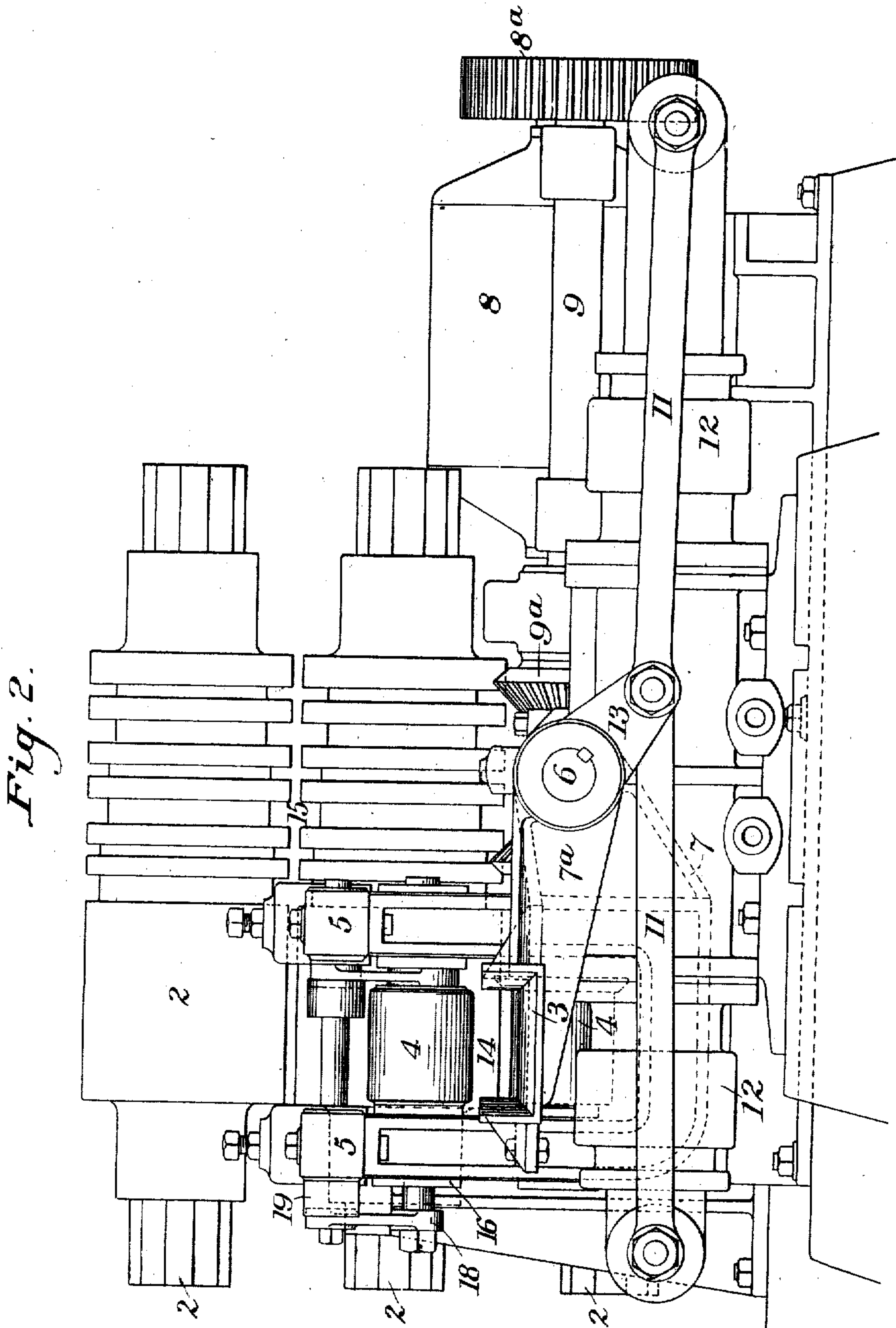
No. 844,419.

PATENTED FEB. 19, 1907.

E. E. SLICK,  
FEEDING DEVICE FOR ROLLING MILLS.

APPLICATION FILED NOV. 29, 1905.

4 SHEETS—SHEET 2.



WITNESSES

*R. A. Balderson.*  
*Warren W. Swartz*

INVENTOR

*E. E. Slick*  
*by Barlow & Rymer*  
*his attys*

No. 844,419.

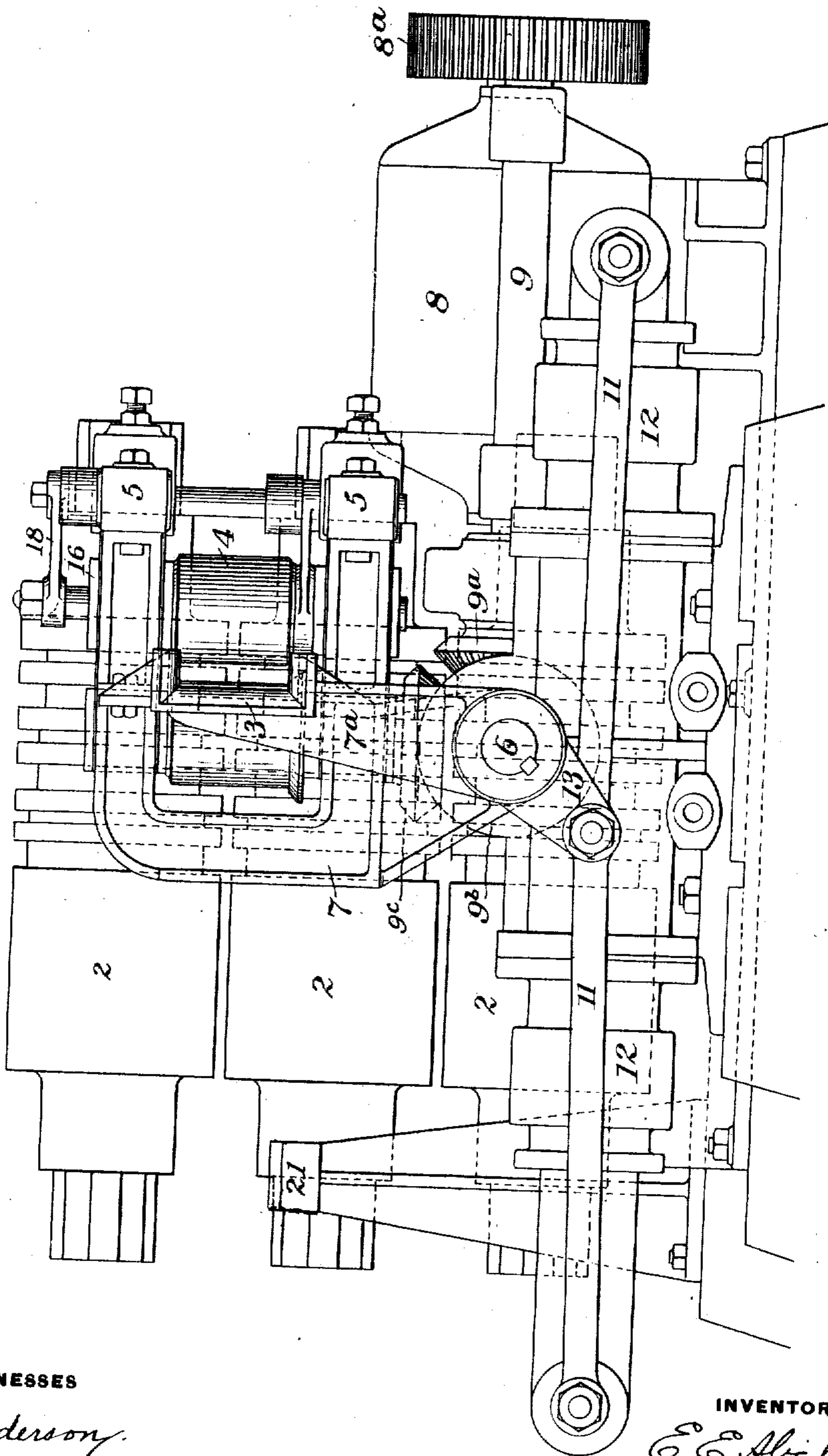
PATENTED FEB. 19, 1907.

E. E. SLICK.  
FEEDING DEVICE FOR ROLLING MILLS.

APPLICATION FILED NOV. 20, 1905.

4 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

*R. A. Balderson.*  
*Warren W. Swartz*

INVENTOR

*E. E. Slick*  
*by Clarence Heymer*  
*his atty*

No. 844,419.

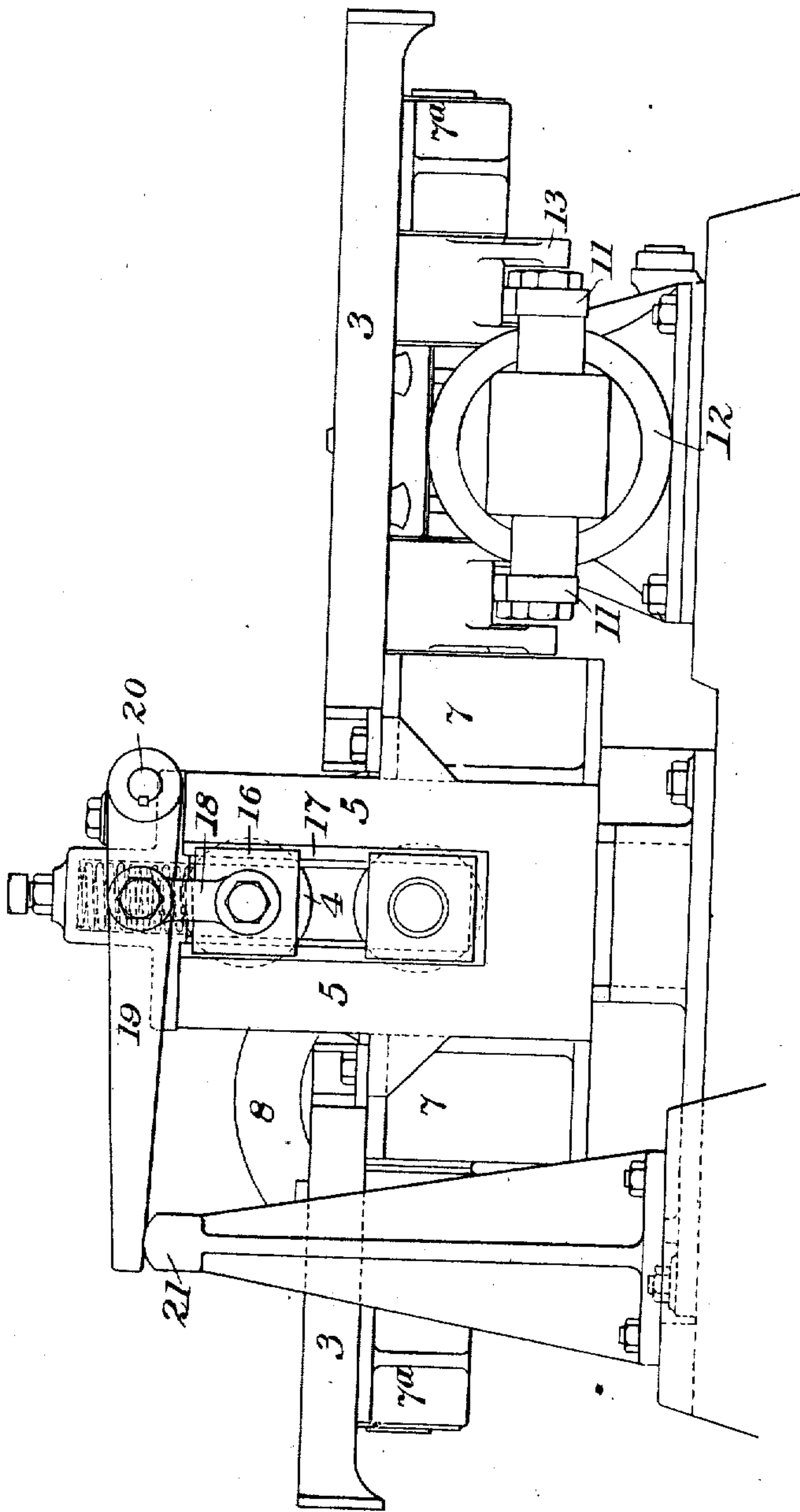
PATENTED FEB. 19, 1907.

E. E. SLICK.  
FEEDING DEVICE FOR ROLLING MILLS.

APPLICATION FILED NOV. 29, 1905.

4 SHEETS—SHEET 4.

Fig. 4.



WITNESSES

*R. A. Balderson.*  
*Warren W. Swartz*

INVENTOR

*E. E. Slick*  
*by Parker & Dyman*  
*his attys*



# UNITED STATES PATENT OFFICE.

EDWIN E. SLICK, OF PITTSBURG, PENNSYLVANIA.

## FEEDING DEVICE FOR ROLLING-MILLS.

No. 844,419.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed November 29, 1905. Serial No. 289,612.

*To all whom it may concern:*

Be it known that I, EDWIN E. SLICK, of Pittsburgh, Allegheny county, Pennsylvania, have invented a new and useful Feeding Device for Rolling-Mills, 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 of a portion of the rolling-mill embodying my invention, the roll-guides and their adjuncts being removed for the purpose of better showing the pinch-rolls and their operating and lifting mechanism. Fig. 2 is a front elevation showing the pinch-rolls and their adjuncts in their receiving positions. Fig. 3 is a view similar to Fig. 2, but with the pinch-rolls raised into line with the edging-passes of the rolls; and Fig. 4 is a side elevation of the pinch-roll mechanism.

The invention has relation to rolling-mills, such as are used for reducing ingots, blooms, slabs, &c., to a finished material, which require to be turned from a flat to an edgewise position before being passed through some of the passes in the reducing-rolls; and the invention is designed to provide improved means for turning and transferring such blanks from the position in which they are delivered from the rolls into position to enter a subsequent pass in the rolls and to provide means on the turning mechanism by which the blanks are held in their turned position and are positively fed into the rolls while being held in their turned position.

In carrying out my invention I obtain the foregoing object by mounting the housings for the pinch-rolls and the guides upon the machine in such a manner that they may move bodily from their horizontal receiving positions to a vertical position wherein the pinch-rolls are in line with one of a series of edging-passes in the reducing-rolls.

My invention also provides means whereby the pinch-rolls are opened or separated to receive the bar or other object at the time it is about to enter the same from the rolls and to subsequently close upon the bar, thereby preventing the end of said bar from flexing or buckling in entering.

In the drawings, 2 represents the reducing-rolls, from which the bar passes to the guides 3 and pinch-rolls 4. The pinch-rolls 4 are journaled in the usual manner in the housings 5, carried by arms 7, which, together with

the arms 7<sup>a</sup>, which support the guides 3, are secured to a rock-shaft 6. The pinch-rolls 4 are driven by motor 3, which drives the shaft 9 through the gearing 8<sup>a</sup>. The shaft 9 carries a bevel gear-wheel 9<sup>a</sup>, which meshes with a similar wheel 9<sup>b</sup> on the shaft 6, and which drives a third wheel 9<sup>c</sup> on the short shaft 9<sup>d</sup>. The rock-shaft 6 is actuated by means of the hydraulic cylinders 12 through the medium of the connecting rods or links 11, connected to the arm 13 of said shafts.

14 and 15 designate, respectively, the slabbing and edging passes of the reducing-rolls, which are journaled and driven in the usual manner. (Not shown.) The journal 16 of the upper pinch-roll is movable in the guides 17 of the housing 5 and is provided with the usual housing-springs. The said journal is connected by links 18 with stop-levers 19, pivoted at 20 and adapted to engage a stop 21.

The operation is as follows: The bar or other piece entering the guides 3 from the reducing-roll pass 14 and passing through the pinch-rolls 4 is lifted into proper relation to the edging-passes 15 of the rolls by actuating the rock-shaft 6 to raise the pinch-rolls and the said guide into the vertical position. (Shown in Fig. 3.) It will be seen that the arrangement of the gearing above described for actuating the pinch-rolls will permit this movement of the said rolls and will also permit either movement to be reversed. As the pinch-rolls and guides are lowered to position to receive a new bar the lever 19 engages the stop 21, and thereby raises the upper pinch-roll in the guide 17 sufficiently to spread the two rolls to receive another bar. As the pinch-rolls are again lifted to the position shown in Fig. 3 the upper roll is closed to pinch the bar. In this manner the entry of the bar to these rolls is greatly facilitated and its buckling or flexing is prevented.

It will be apparent that by using and operating the pinch-rolls in the manner above described I am enabled to positively feed flat blanks forwardly into engagement with the reducing-rolls while they are held on edge.

Variations in the construction and the arrangement of the parts may be made without departing from my invention.

I claim—

1. In a feeding device for rolling-mills or similar apparatus, reducing-rolls, a positively-driven roller, a carrier on which the roller is mounted and mechanism for moving the carrier in a plane parallel with the plane



through the axis of the reducing-rolls into different angular positions; substantially as described.

2. In a feeding device for rolling-mills or similar apparatus, reducing-rolls, a positively-driven roller a carrier on which the roller is mounted, mechanism for moving the carrier in a plane parallel with the plane through the axis of the reducing-rolls into different angular positions and means for positively driving said roller in at least one position thereof; substantially as described.

3. In a feeding device for rolling-mills, reducing-rolls, a pair of rollers, a carrier therefor, mechanism for moving the carrier in a plane parallel to the plane through the axis of the reducing-rolls, into different angular positions and connections arranged to drive one of said rollers; substantially as described.

4. In a feeding apparatus for rolling-mills, reducing-rolls, a gripping device arranged to engage the metal, a carrier for the gripping device, mechanism for moving the carrier in a plane parallel to the plane through the axis of the reducing-rolls into different angular positions and mechanism for driving said gripping device and feeding forward the metal when so gripped; substantially as described.

5. In a feeding device for rolling-mills, the combination with the reducing-rolls, of pinch-rolls arranged to be moved from a horizontal position to a vertical position in line with the passes of the said rolls, means for driving said rolls; substantially as described.

6. In a feeding device for rolling-mills, the combination with the reducing-rolls, of pinch-rolls, guides thereto, and means for elevating said pinch-rolls and guides from a horizontal position to a vertical position in line with the passes of the said reducing-rolls; substantially as described.

7. In a feeding device for rolling-mills, the combination with the reducing-rolls, of pinch-rolls and guides, arms supporting said rolls and guides, means for driving said pinch-rolls, a rock-shaft carrying said arms, and power means for actuating the said shaft; substantially as described.

8. In a feeding device for rolling-mills, the combination with reducing-rolls, of pinch-rolls, a rocking carrier for said pinch-rolls, power means for actuating said carrier in a plane parallel with the plane through the axes of the reducing-rolls, and gearing for driving said pinch-rolls; substantially as described.

9. In a feeding device for rolling-mills, the combination with reducing-rolls, of power-driven pinch-rolls, a movable support for said pinch-rolls and means for turning said

support to move the pinch-rolls from a horizontal into a vertical position; substantially as described.

10. In a feeding device for rolling-mills, the combination with reducing-rolls, of pinch-rolls adapted to be turned from a horizontal to a vertical position, a vertically-swinging carrier for said pinch-rolls, power actuating means for said carrier, mechanism for separating said pinch-rolls and means adapted to separate the pinch-rolls as they come to receiving position; substantially as described.

11. In a feeding device for rolling-mills, the combination with reducing-rolls, of pinch-rolls, a movable carrier adapted to turn said pinch-rolls from a horizontal to a vertical position, and means for moving the upper pinch-roll away from its fellow; substantially as described.

12. In a feeding device for rolling-mills, the combination with reducing-rolls, of pinch-rolls, one of which is movable in its housing, a vertically-swinging carrier for the pinch-rolls, and their housings, means for swinging said carrier in a plane parallel with the plane through the axes of the reducing-rolls and lever-and-stop mechanism for actuating the movable pinch-rolls; substantially as described.

13. In a feeding device for rolling-mills, the combination with reducing-rolls, of pinch-rolls, one of which is movable in its housing, a vertically-swinging carrier for the pinch-rolls, and their housings, a lever supported on the pinch-roll housings and connected to the journal-boxes of the movable rolls, and fixed stops arranged for engagement with the said lever; substantially as described.

14. In a feeding device for rolling-mills, the combination with reducing-rolls, of a rock-shaft, power-cylinders for actuating said shaft, arms secured to said shaft, pinch-rolls, and guides therefor, supported and carried by the said arms, and gearing for actuating the pinch-rolls in their different positions; substantially as described.

15. In a feeding device for rolling-mills, the combination with reducing-rolls, of pinch-rolls, a movable support for said pinch-rolls, means for turning said support to move the pinch-rolls into and out of a horizontal and vertical position and means for positively driving said pinch-rolls in all positions; substantially as described.

In testimony whereof I have hereunto set my hand.

EDWIN E. SLICK.

Witnesses:

R. D. LITTLE,  
H. M. CORWIN.