June 27, 1933. B. N. BLETSO 1,915,714

ROD SHIFTER

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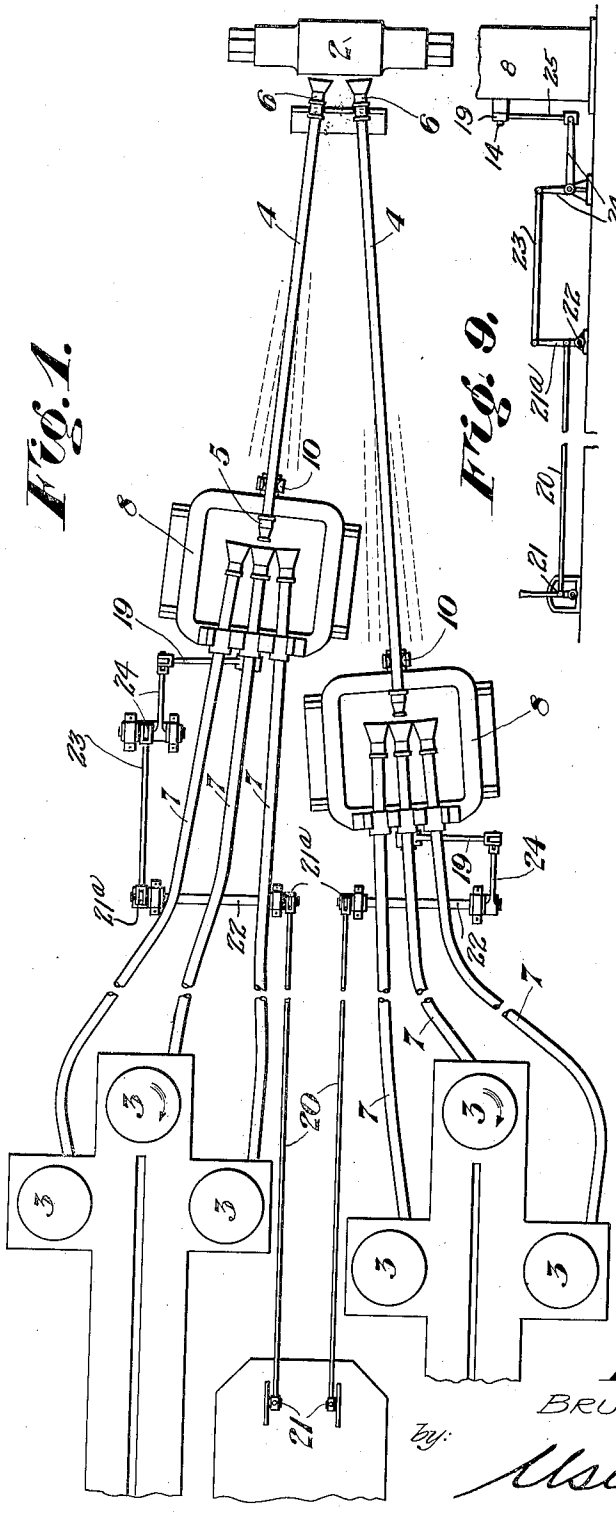


Fig. 1.

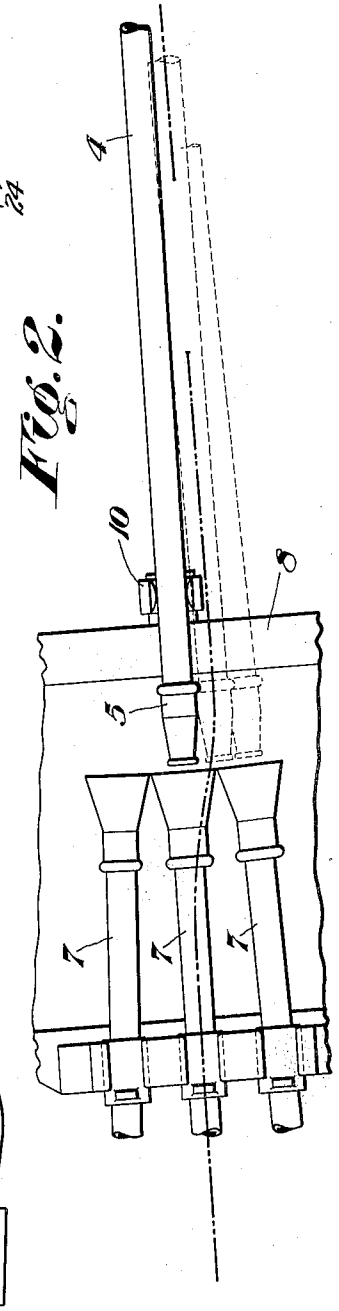


Fig. 2.

Fig. 3.

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Fig. 4.

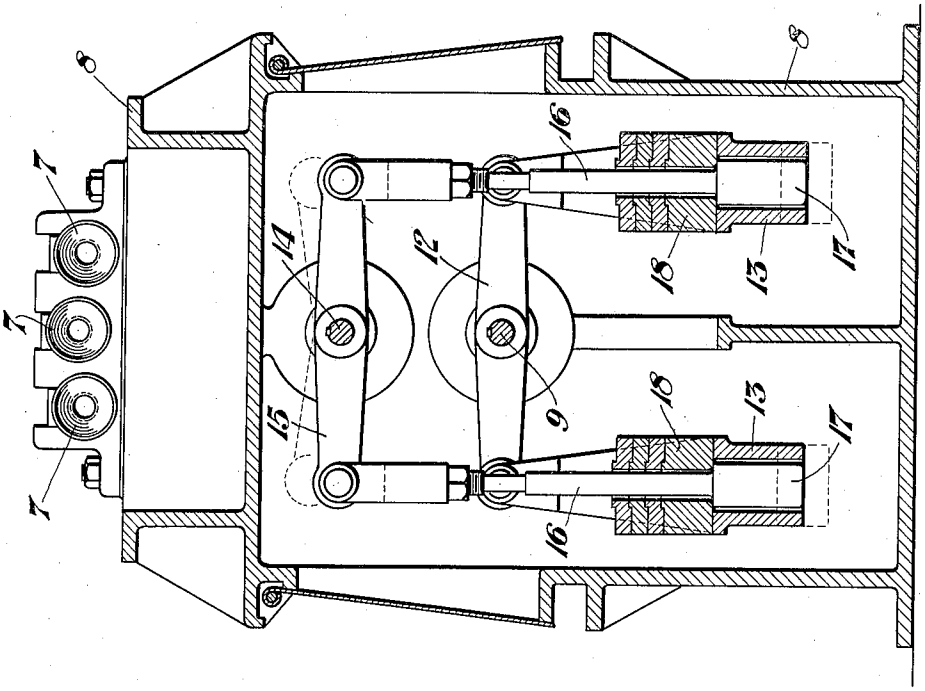
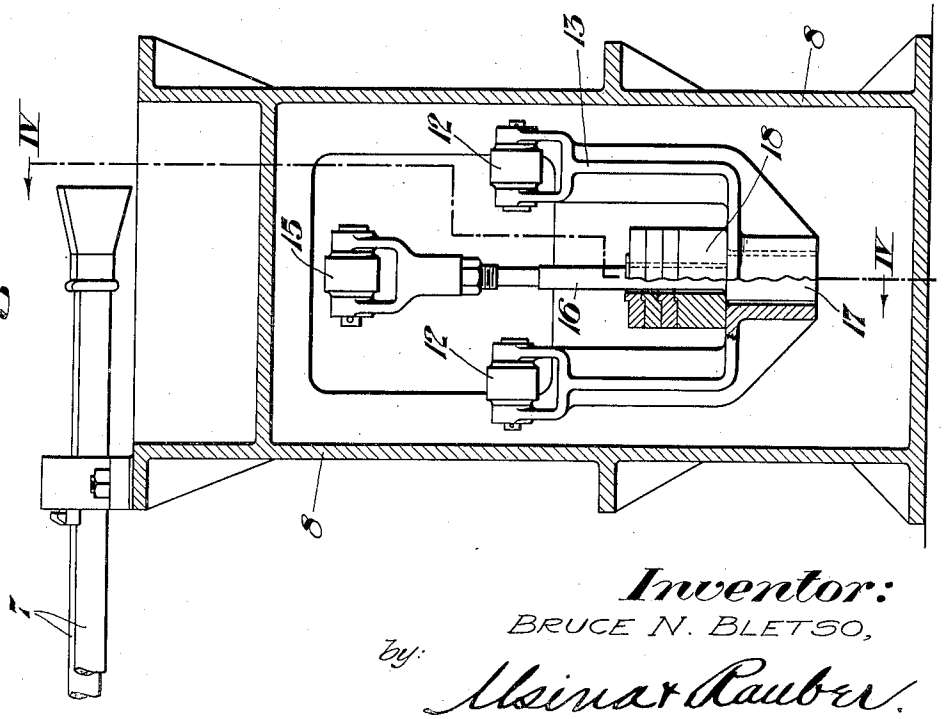


Fig. 3.



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Fig. 6.

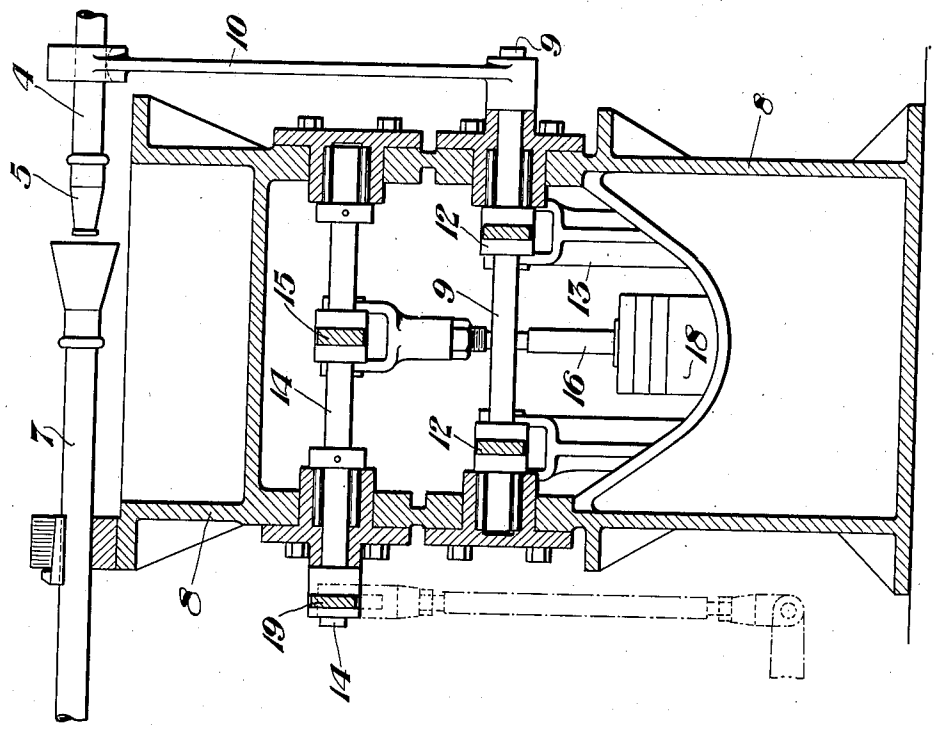
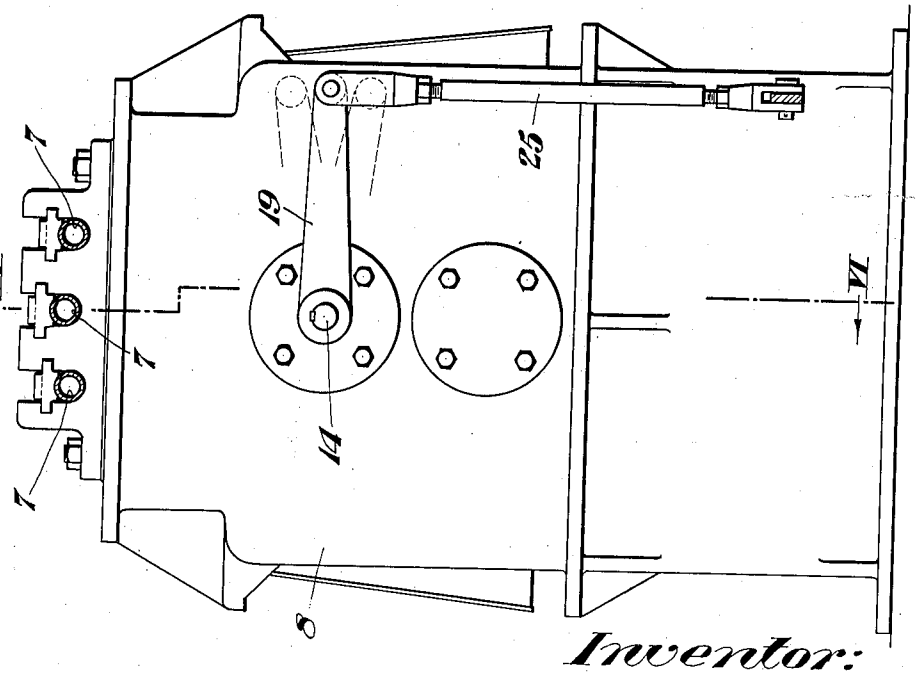


Fig. 5.



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Fig. 8.

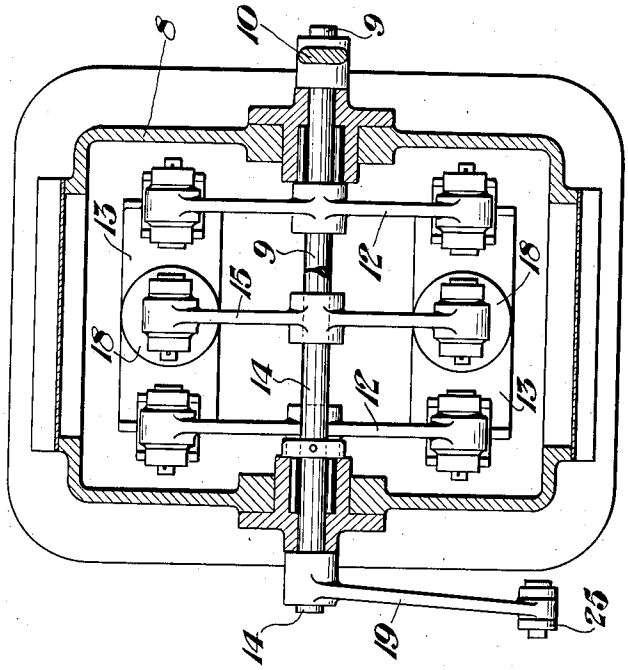
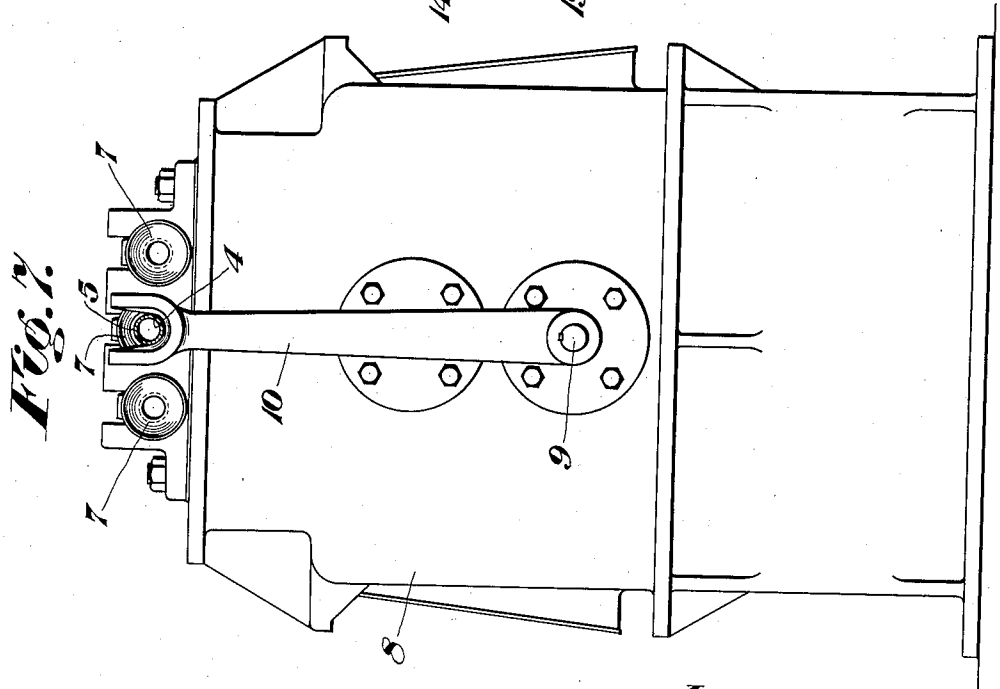


Fig. 7.



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Patented June 27, 1933 1,915,714

UNITED STATES PATENT OFFICE

BRUCE N. BLETSO, OF CLEVELAND HEIGHTS, OHIO

ROD SHIFTER

Application filed August 28, 1931. Serial No. 560,027.

This invention relates to rod shifters for use in rolling mills, one of the objects being to provide a mechanism of a new and improved construction. Other objects may later become apparent.

In the drawings:

Figure 1 is a top plan view of an example of this invention as it appears in use.

Figure 2 is an enlarged portion of Figure 1.

Figure 3 is a vertical cross-sectioned end view of the example shown in Figure 1.

Figure 4 is a cross-section on the line IV—IV of Figure 3.

Figure 5 is an end view.

Figure 6 is a cross-section taken on the line VI—VI of Figure 5.

Figure 7 is an end view showing the reverse end of that shown in Figure 5.

Figure 8 is a horizontal cross-section.

Figure 9 is a side elevation of details in Figure 1.

Having reference to these drawings, there is shown a delivery roll 2 of a rod rolling mill. The rods of approximate equal weight, and therefore length, are delivered from this roll in close succession to be individually coiled upon reels 3. It is therefore necessary to provide some means for directing each succeeding rod to a different one of the group of reels. There is a great advantage in having this directing or switching of succeeding rods selective in place of a prescribed sequence which is now the common practice. This is accomplished by means of the rod shifter forming the subject of this invention.

The example shown includes two units, each comprising a swingable tube 4 having a free end 5 and a pivoted end 6, this latter end being flared and positioned to receive a rod delivered by the roll 2. A plurality of fixed tubes 7 are alined with the pivoted end 6 of the swingable tube 4 and have flared ends arranged for selective registration with the free end 5 thereof.

A frame 8 is positioned beneath the free end 5 of the swingable tube 4 and carries an axle 9, a lever 10 which engages this free end 5 being fixed to the end of this axle. A pair of rocking beams 12 are fixed to the axle 9 and an apertured basket member 13 is suspended between each of these rocking beams at their ends. A second axle 14 is carried in the frame 8 in line with and directly above the axle 9, a third rocking beam 15 being fixed to the axle 14 and alined between the rocking beams 12 with a shaft 16 having enlarged ends 17 suspended from each end thereof. Weights 18 are slidably mounted on the shafts 16 above their enlarged ends 17. A lever 19 is fixed to one end of the axle 14 and is connected, through a system of rods and levers, to a control station 21.

This control station includes a hand lever which moves a rod 20 connected to one of a pair of upstanding levers 21^a mounted on a common shaft 22. The other of these levers 21^a is connected by a rod 23 to a bell crank 24 which in turn is connected to the lever 19 by a universally jointed rod 25. When the lever at the control station 21 is moved, these various rods and levers will communicate this motion to the lever 19. This system is a suggestion only as any other means for rocking the lever 19 might as well be used.

In operation rods are delivered from the roll 2 into the pivoted end 6 of the swingable tube 4 and pass out the free end 5 thereof into one of the fixed tube 7 for delivery to the reel 3, the center fixed tube and reel having been selected to illustrate the example shown in Figures 1 and 2 of the drawings.

As rods issuing from a mill follow one another in close succession having only a short gap between the last end of one rod and the first end of the succeeding rod as they issue from the finishing rolls and due to the high speed of modern mills, the duration of elapsed time between the passing of the last end of a rod and the first end of the succeeding rod to a given point is very short, sometimes being only a fractional part of a second, therefore the swingable tube 4 must swing into registration with another one of the fixed tubes 7 the instant the last end of the rod being coiled on the center reel has passed through the free end to the swingable tube, to permit the succeeding rod to be directed to another of the reels 3.

This may be accomplished by rotating the axle 14 in the desired direction so as to lift

one of the weights 18 out of engagement with one of the baskets 13 by means of the shaft 16 and enlarged head 17. This may be done from the control station 21 through the rods and levers 19 and 20.

This results in the opposite shaft sliding down through its weight 18 and leaving the latter in engagement with the opposite basket member, so that an unbalanced condition results and the swingable tube 4 is urged into registration with the desired fixed tube by the lever 10. The rod passing through the tube of course locks it and prevents it from completely leaving its position. The moment a break in the rod delivered from the roll 2 occurs the tube 4 will swing quickly into the desired registration, so that when delivery is again resumed the rod will be fed to the desired loading reel. Figure 2 picturizes this action, the rod being represented by a broken line and the swinging of the tube 4 by dotted lines. Of course, if the beam 15 is moved to a horizontal position while the beams 12 are rocked in one direction or another, one of the suspended weights 18 will rest on that basket carried by these beams' high ends. Then when a break in the rod occurs this weight will rock these beams into horizontal position, which will be maintained, because both weights will then be engaging both baskets equally. When in this position, the tube 4 will be urged into registration with the middle one of the fixed tubes 7, this being the position illustrated by the heavy lines in Figure 4.

Although I have shown and described a specific example of my invention in accordance with the patent statutes, I do not intend its scope to be limited thereto, except as defined by the appended claims.

I claim:

1. A rod shifter for rolling mills comprising a swingable tube having a free end and a pivoted end, a plurality of fixed tubes arranged in alinement with the pivoted end of said swingable tube for selective registration by the free end thereof, a frame, an axle in said frame, a lever fixed to said axle and in connection with said swingable tube, a rocked beam fixed to said axle, a second axle in line with and above said first axle, a rocker beam carried by said second axle and weights arranged on the end of said last named rocker beam for engaging one end or the other or both ends of said first named rocker beam according to the rotation of said second axle.

2. A rod shifter for rolling mills comprising a swingable tube having a free end and a pivoted end, a plurality of fixed tubes arranged in alinement with the pivoted end of said swingable tube for selective registration by the free end thereof, a frame under the free end of said swingable tube, a horizontal axle carried by said frame, a lever fixed to said axle and arranged to swing said swingable tube, rocking beams fixed to said axle, apertured basket members suspended between the ends of said rocking beams, a second horizontal axle carried by said frame in line with and above said first axle, a rocking beam fixed to said second axle and alined between said rocking beams on said first axle, shafts depending from the ends of said second named rocking beam through said apertured basket members and having enlarged ends, weights slidably carried on said shafts above their enlarged ends and engageable with said basket members and means for selectively rotating said second axle.

In testimony whereof, I have hereunto set my hand.

BRUCE N. BLETSO.