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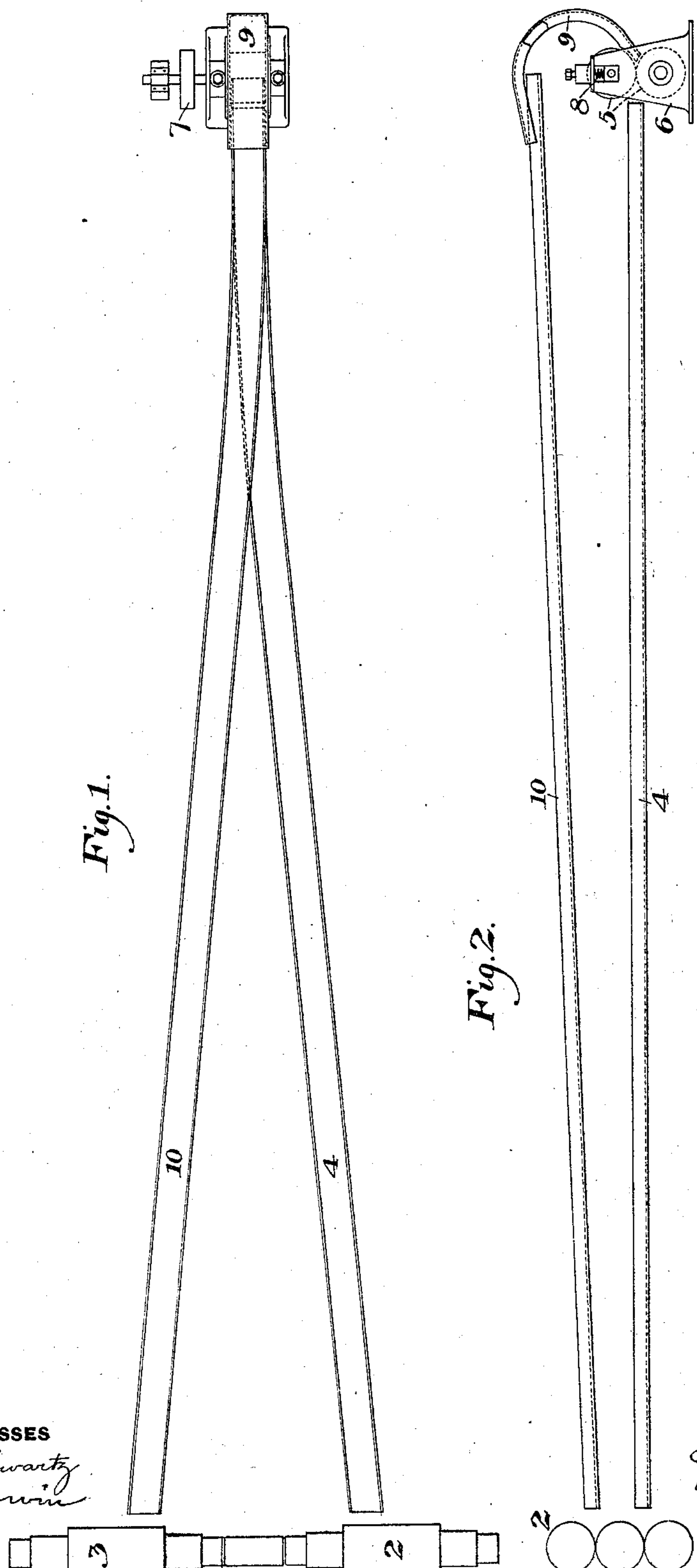
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REPEATER FOR ROLLING MILLS.

APPLICATION FILED NOV. 7, 1902.

NO MODEL.

Fig. 1.

Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWIN E. SLICK, OF PITTSBURG, PENNSYLVANIA.

REPEATER FOR ROLLING-MILLS.

SPECIFICATION forming part of Letters Patent No. 726,774, dated April 28, 1903.

Application filed November 7, 1902. Serial No. 130,414. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. SLICK, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Repeater 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—

10 Figure 1 is a top plan view showing my improved repeater mechanism applied to two three-high stands of rolls arranged end to end, and Fig. 2 is a side elevation of the same.

15 My invention relates to repeaters for rolling-mills, and is designed to improve such mechanism and render them applicable to the rolling of hoop-iron, bars, or rods in long lengths.

20 Heretofore in the use of repeaters the metal passing from the rolls enters directly into a curved guide or repeater which directs it around into another pass of the same rolls or another set of rolls arranged end to end therewith. This system involves many difficulties 25 in proportioning the speed of the rolls so accurately that the material will not loop out of the repeater, since the metal generally enters one roll before it leaves the preceding roll.

30 My invention greatly decreases the labor and expense of rolling long lengths of flexible metal, such as rods or bars, by rendering the repeater mechanism applicable thereto, and in my system I use a straight trough or guide which leads back to the repeater and another 35 similar trough or guide which leads the metal forwardly from the repeater to the next pass in the same or an adjacent set of rolls. The troughs are of such length that the material always leaves the one pass before it enters 40 the succeeding pass. A pair of pinch-rolls is employed for forcing the metal through the repeater and into the succeeding pass, and preferably only one of these pinch-rolls is positively driven, the other being pressed 45 against the metal passing between them to allow slipping of the metal relatively to these rolls. The repeater is preferably arranged so that the metal strip is turned over, the bottom face on one pass becoming the top face 50 on the next pass, though it may be arranged

to operate without turning the metal over in certain locations.

In the drawings, 2 represents one stand of three-high rolls, and 3 another stand in end-to-end alinement therewith. A metal trough 55 4 leads from a lower pass of the first three-high set outwardly at a slight lateral angle, and at the end of this trough is placed a pair of pinch-rolls 5 5, mounted in a suitable housing 6. One of these rollers, preferably the 60 lower, is positively driven—for example, by a belt passing around a pulley 7 on its extended shaft—while the upper roll is provided with movable bearings, which are normally pressed downwardly by springs 8. The 65 metal passing between the pinch-rolls enters the repeater proper, 9, which preferably consists of a bent section of the channel-iron, forming a concave trough, with its upper end lapping over another straight trough 10, which 70 extends back at a slight angle to an upper pass of the second three-high set 3. The length of the two troughs is such that the metal leaves the one pass before it enters the next, and when in operation the hot metal strip or bar 75 passes out within the first trough, thence between the pinch-rollers, thence around and within the repeater, and back to the next pass within the other straight trough. After the rear end of the piece has left the first pass 80 the pinch-rollers act to force the metal forwardly until its front end enters the next pass. The pinch-rollers are preferably provided with connections which drive the lower roll continuously, the upper roll being driven 85 merely by friction with the metal while the strip is being fed forward and at other times by friction with the lower rolls.

The advantages of my invention result from the use of the straight troughs in combination with the pinch-rolls and repeater, 90 since thereby I am enabled to use a repeater upon long lengths of flexible metal strips or rods without danger of looping out and with a large saving in economy of labor. The location of the pinch-rollers at the entrance of 95 the repeater is of advantage, as they aid in curving the strip and are at a distance from the rolls which is suitable for aiding the passing out of the metal.

By the word "repeater" in my broader claims I do not intend to restrict myself to the curved trough shown, but intend to cover in this word any device for reversing the direction of movement of the strip or bar being rolled. This word "repeater" is used in my claims to designate a device which curves a flexible bar or rod backwardly and directs it in the reverse direction to that at which it issues from the rolls.

The troughs may be at substantially the same level and may lead to different passes of the same set of rolls if three-high. The rolls may both be positively driven and arranged to allow the metal to slip between them, and many other variations may be made in the form and arrangement of the apparatus without departing from my invention.

I claim—

1. In repeater mechanism; a set of rolls, a straight trough leading from the rolls, a repeater at the end of said trough, another straight trough leading from the opposite end of the repeater, and feed-rolls arranged to receive the metal between them and feed forwardly through said system at the time when the metal is entirely out of the rolls; substantially as described.

2. In repeater mechanism a rolling-mill, a repeater arranged to turn the metal over with its reverse face uppermost, straight troughs leading from the mill to the repeater, said troughs being of such a length that the metal emerges from one pass before it enters the

next, and mechanism for positively feeding the metal forwardly through said system; substantially as described.

3. In repeater mechanism, a pair of converging troughs or straight guides leading from the rolls, said trough being of such a length that the metal emerges from one pass before it enters the next, a repeater at their outer ends, a pair of pinch-rolls at the entrance to the repeater, and mechanism for driving at least one of said rolls; substantially as described.

4. In repeater mechanism, a pair of straight troughs at different levels leading from the rolls, a curved repeater at their outer ends, the troughs being of such length that the metal issues from one pass before it enters the next, a pair of pinch-rolls at the entrance to the repeater, and mechanism for driving at least one of said pinch-rolls; substantially as described.

5. In repeater mechanism, a repeater arranged to turn the metal over with its reverse face uppermost, said repeater being of such length that the metal issues from the one pass before it enters the next, and mechanism separate from the mill for feeding the metal forward through the repeater; substantially as described.

In testimony whereof I have hereunto set my hand.

EDWIN E. SLICK.

Witnesses:

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H. M. CORWIN.