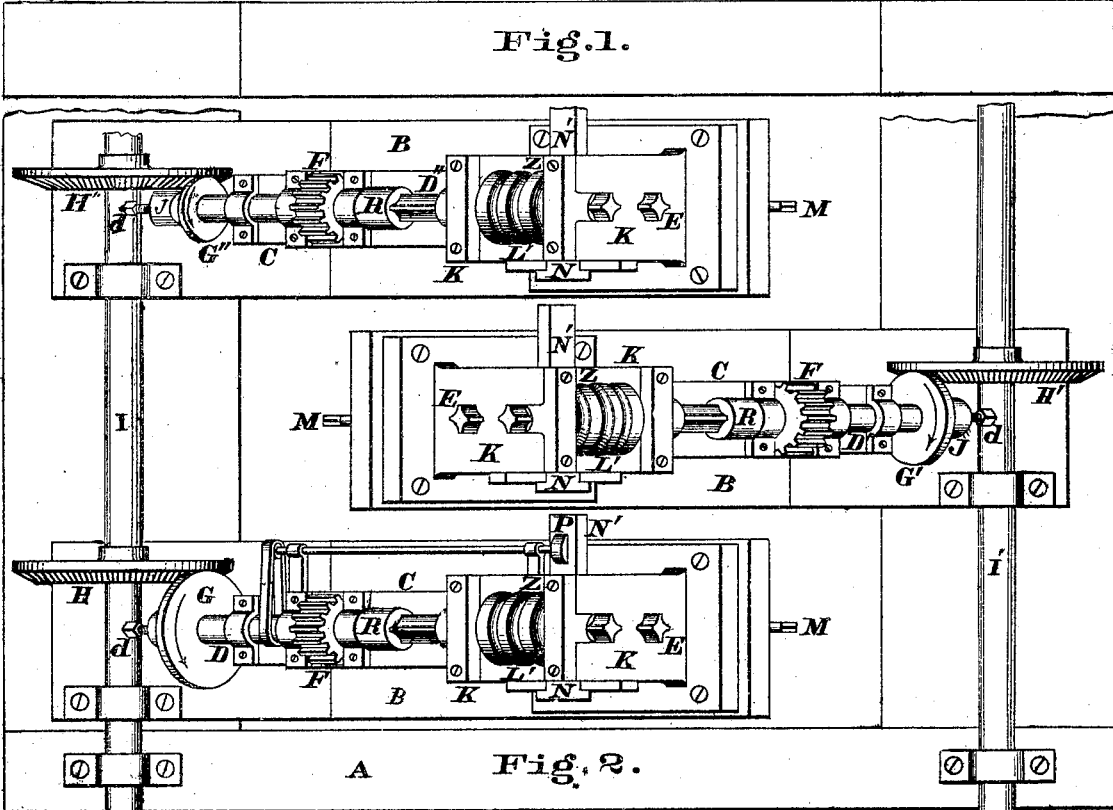
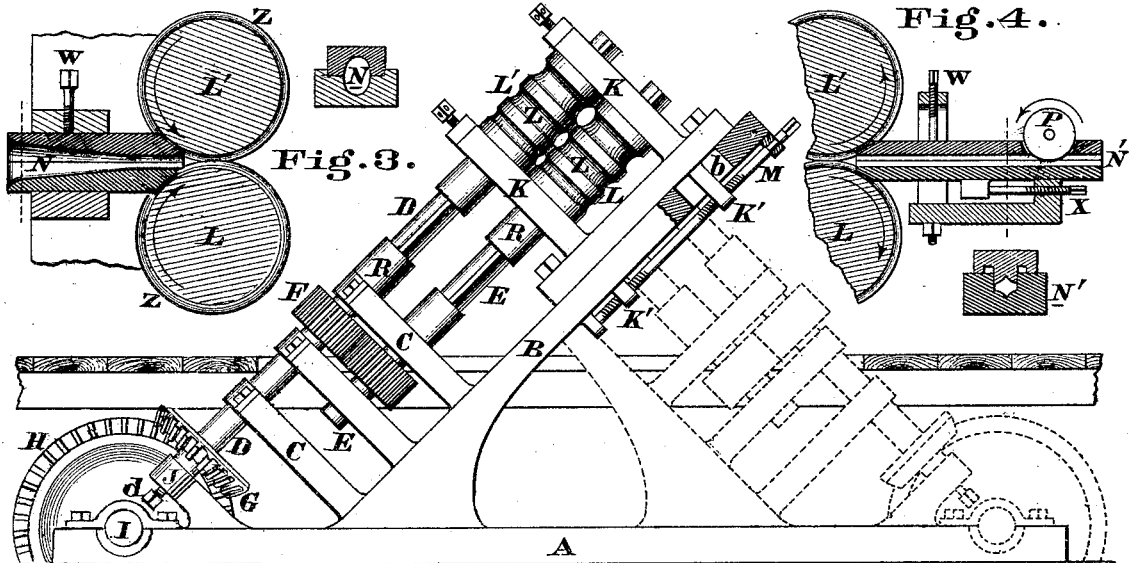


*Tranter & Kinsey,  
Rolling Plates & Bars.*

*No. 113,708.*

*Patented Apr. 11. 1871.*



Attest.  
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**INVENTORS.**  
*By Knight Bros. Atty.*

# United States Patent Office.

JAMES TRANTER AND JOSEPH KINSEY, OF CINCINNATI, OHIO.

Letters Patent No. 113,708, dated April 11, 1871.

## IMPROVEMENT IN ROLLS FOR ROLLING HOOP, BAR, AND ROD-IRON.

The Schedule referred to in these Letters Patent and making part of the same.

We, JAMES TRANTER and JOSEPH KINSEY, both of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Rolls, of which the following is a specification.

### *Nature and Objects of the Invention.*

This invention relates to the class of machines which comprise a train of rolls that are placed in line with each other in such a manner that the bar or rod is discharged from one set of rolls and delivered into another set without any handling whatever; and

The first part of our improvement consists in inclining the rolls at an angle of forty-five degrees to the horizon, and providing them with a series of grooves of equal or unequal diameters, for purposes which will be hereafter fully described.

The second part of our invention relates to an arrangement of devices whereby the rolls can be shifted so as to bring the grooves of the entire train in line with one another.

The third part of our improvement consists in furnishing the delivery-guide of the machine with a small roller, which serves to flatten the crook that is formed on the end of the bar or rod by the action of the rolls, and said roller also assists in drawing the rod from one pair of rolls and guiding it into the succeeding set.

### *General Description with reference to the Drawing.*

Figure 1 is a side elevation of one of our inclined sets of rolls, the position of the succeeding set being indicated by dotted lines;

Figure 2 is a plan of the gearing for operating a train of our inclined rolls;

Figure 3 comprises a longitudinal and a transverse section of the receiving-guide; and

Figure 4 comprises similar sections of the delivery-guide.

A is a sill, to which there is secured, at an angle of forty-five degrees with the horizon, a stout bed-plate, B, having fixed housings C for the support of driving-shaft D and countershaft E, motion being imparted from the former to the latter by customary gearing F.

The lower end of shaft D carries a bevel-pinion, G, that gears with a bevel-wheel, H, upon shaft I.

The shaft D is supported in a step, J, having a set-screw, *d*, for setting up said shaft as fast as it wears.

K represents a movable housing within which the rolls L L' are journaled, and this housing has lugs K' that project through slots *b* in the bed-plate B.

Engaging with these lugs K' is a screw, M, by which the housing K and its accompanying rolls can be adjusted up or down the bed-plate, as occasion

may require, the object of this adjustment being to bring either of the grooves Z directly in line with a similar groove of the other set of rolls.

The grooves Z of the entire train may be of uniform diameters, or, if preferred, each set of rolls may be provided with several distinct sets of grooves having different diameters.

In the drawing the rolls are shown as being provided with three grooves of different diameters, which arrangement is preferred for a mill which is to be employed for rolling various-sized rods, and it will be seen that, by simply shifting the rolls either up or down, either the larger or smaller grooves may be brought in line with one another throughout the entire train.

Whenever it is desired to employ the mill exclusively for rolling rods or bars of uniform diameters the grooves should all be of one size, and as soon as one becomes worn the rolls can be shifted so as to bring an unused groove into action.

N is a tube or funnel, called the receiving-guide, to conduct or feed the bar, rod, or hoop into the first rolls.

N' is a similar tube, called the receiving and delivering-guide, which serves to conduct the metal from one set of rolls to the next in succession.

This tube may be provided with a roller, P, to serve the purpose of flattening the end of the rod, bar, or hoop in case it should become crooked or bent in the act of rolling.

The two members of the receiving-guide are shown in transverse section at *n*, and of the delivery-guide at *n'*.

W and X are screws for vertical and longitudinal adjustment of the guides.

A clutch, R, of any approved form may be employed for communicating motion from the shafts D E to the rolls L L'.

The bevel-pinions G G' G'' of the driving-shafts D D' D'' are driven by bevel-wheels H H' H'' upon shafts I I'.

The pinions of each successive set are of less diameter than the preceding ones, in order that the more remote rolls may revolve at a higher speed commensurate with the elongation of the rod as it passes through the train.

### *Operation.*

The rod, bar, hoop, or rail, after being taken from the furnace or from the ordinary roughing-rolls, is inserted in the first set of our inclined rolls, from which it passes directly, and without any handling whatever, into the next set, and so on through the series of any desired number of sets. The gauge of the hoop or

bar, or the diameter of rod or other work is, of course, diminished at each set of rolls, of which the last set imparts the determinate size and finish.

The train may consist of as many distinct sets of rolls as occasion may require to make the gauge of hoop or the diameter of rod or other article, whether from "billet" or from the roughing-rolls to finished work.

The inclination of the rolls at an angle of forty-five degrees to the horizon will be found to be a more mechanical arrangement than if one set of them were horizontal and the other set vertical, as the great weight upon the upright shaft and consequent friction would soon wear out the step or bearing and render frequent adjustment and repairs necessary.

With our arrangement the wear is reduced to a minimum, is uniform upon both sets of rolls, and their adjustment is only necessary at long intervals of time

*Claim.*

We claim as new and of our invention—

1. Two or more pairs of grooved rolls, secured one behind the other in adjustable housings at right angles to one another, and at an angle of forty-five degrees to the horizon, substantially as described.
  2. In combination with the subject-matter of the first claim, the bed-plate B and screw M, as and for the purpose set forth.
  3. In combination with a train of rolls, the delivery-guide N and roller P, for the purpose specified.
- In testimony of which invention we hereunto set our hands.

JAMES TRANTER.  
JOSEPH KINSEY.

Witnesses:

GEO. H. KNIGHT,  
JAMES H. LAYMAN.