

J. E. ATWOOD.
Rolling-Mills.

No. 138,114.

Patented April 22, 1873.

Fig. 2

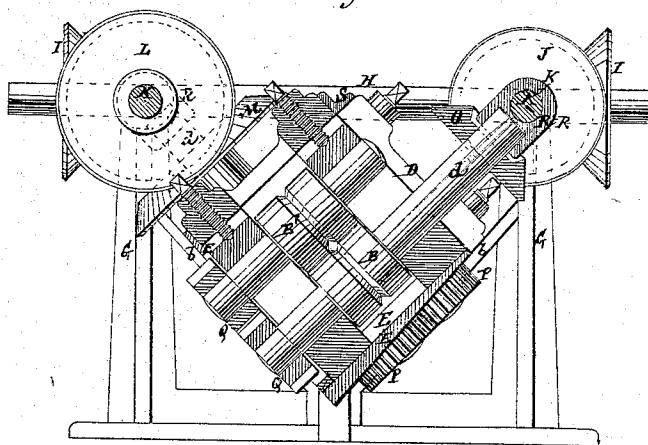
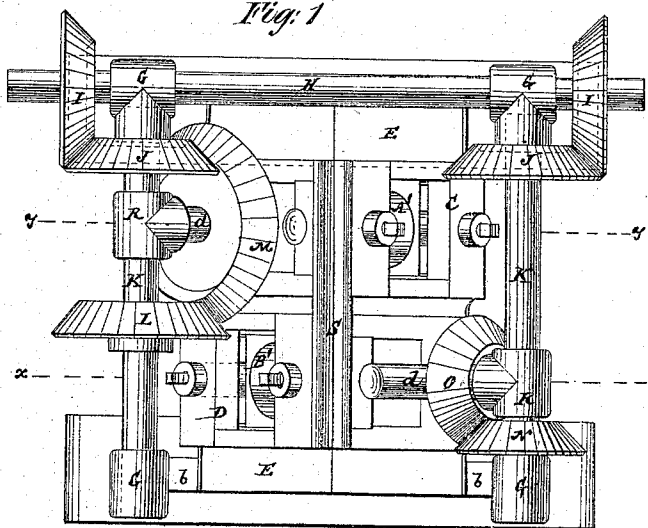


Fig: 1.



Witnesses.

Ferd Haymer
Ferd Quack

Inventor:

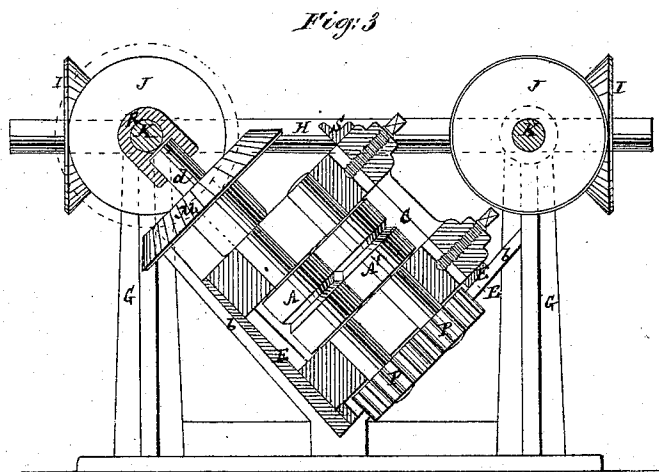
John E. Morris
per Brown & Allen
Attorneys

3 Sheets--Sheet 2.

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Witnesses:
Fred. Hagner
Ferd. Quack

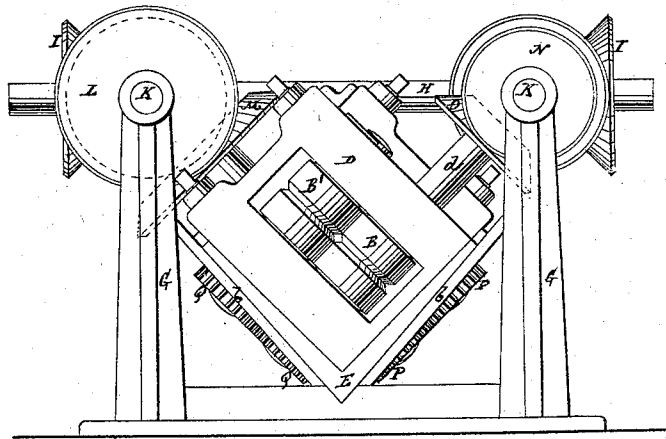
Inventor.
John E. Atwood
per *Wm. H. Allen*
Attorneys

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Fig. 1



Witnesses:

Fred Hynes
Fred Hynes

Inventor

John E. Atwood
per Brown & Allen
Attorneys

UNITED STATES PATENT OFFICE.

JOHN E. ATWOOD, OF MANSFIELD, CONNECTICUT.

IMPROVEMENT IN ROLLING-MILLS.

Specification forming part of Letters Patent No. **138,114**, dated April 22, 1873; application filed December 24, 1872.

To all whom it may concern:

Be it known that I, JOHN E. ATWOOD, of Mansfield, in the county of Tolland and State of Connecticut, have invented certain Improvements in Rolling-Mills, of which the following is a specification:

This invention relates to that class of mills for rolling bar-iron in which the rolls of each succeeding pair in a set not only have their axes in planes at right angles to those of a preceding pair to provide for rolling the bar on its several sides without turning it, but, also, in which each pair of rolls is set obliquely to an adjacent pair, so that the axes of the several rolls are arranged at angles of forty-five degrees or thereabout from a vertical position. The invention consists in certain novelties of construction as regards the framework and parts connected therewith, supports for the working parts, including a V-shaped bed-plate for reception and support of the several housings, and an angle-iron tie-bar arranged to connect the two housings of each pair of rolls in a set.

In the accompanying drawing which forms part of this specification, Figure 1 represents a plan of a rolling-mill, or, rather, two pairs of rolls, in accordance with my invention. Fig. 2 is a vertical section on the line *x x*, and Fig. 3 a vertical section on the line *y y'*. Fig. 4 is an end view mainly in illustration of the V-shaped bed-plate, which carries the housings.

Similar letters of reference indicate corresponding parts.

A A' and B B' represent two pairs of rolls comprising one set arranged in reversely-oblique positions relatively with each other, at angles of forty-five degrees or thereabout, to a vertical position. C and D are the housings carrying said rolls, both of which housings I am enabled to make of similar construction, and yet to provide for rolling the bar on its several sides without turning it by reason of the reversely-oblique disposition of the two pairs of rolls, the heads of the housings only being changed to lie on opposite sides of a vertical plane. This arrangement greatly simplifies the construction as compared with an alternate horizontal and ver-

tical position of the two pairs of rolls in a set, and other advantages incidental to such arrangement are obtained. The housings C and D are seated within and supported by a V-shaped bed-plate, E, which may, if desired, be extended to carry the next or any number of housings for succeeding sets of rolls, in a consecutive disposition of rolls, for gradually reducing or shaping the bar. This bed-plate E is carried by diagonal braces *b b* of opposite end frames G G. The one of these end frames serves to carry the main or driving shaft H, which extends across it at top and, by means of bevel-wheels I I and J J, revolves parallel counter-shafts K K, arranged at right angles to the shaft H on opposite sides of the bed-plate E, but above it, and having their bearings in the opposite end frames G G. The side shafts K K may be extended to operate another set of rolls or any number of sets of rolls in a series. This combination of the cross-driving shaft H with the parallel side shafts K K constitutes a very simple arrangement for operating a succession of rolls or sets of rolls. Motion is communicated from the side shafts K K to operate the one roll, A and B, of each pair of rolls in a set by means of bevel-gear L M and N O of suitable diameters. The driving or driven rolls A and B are geared, by pinions P P and Q Q, with their fellow rolls A' B'. The shafts *d d* of the driving or driven rolls A and B work at their upper ends in bearings R R hung loosely or freely on the shafts K K, which thus serve as supports to said bearings. The housings C and D of each set, or the two pairs of rolls in a set, are tied or connected with each other at their tops to steady or stiffen them by means of an angle-bar, S, secured by its one flange or rib to the one housing and by its other flange or rib to the other housing. This constitutes a sure, simple, and steady means of holding the housings.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The V-shaped bed-plate E, in combination with the reversely-oblique pairs of rolls A A' and B B' and their housings C and D, essentially as described.

2. The combination, with the reversely-

oblique housings C and D, of the angle-iron tie-bar S secured to the housings by its opposite flanges or ribs, substantially as specified.

3. The combination, with the reversely-inclined or oblique roll-shafts *d d* and their rolls A B, of the upper loose bearings R R, the wheels L M, N O, and the horizontal and

parallel side shafts K K, the whole being arranged, in relation with each other, essentially as shown and described.

JOHN E. ATWOOD.

Witnesses:

EUGENE ATWOOD,
A. J. GURLEY.