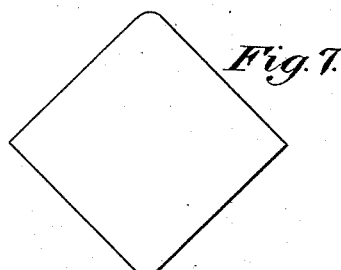
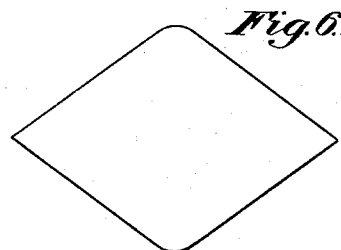
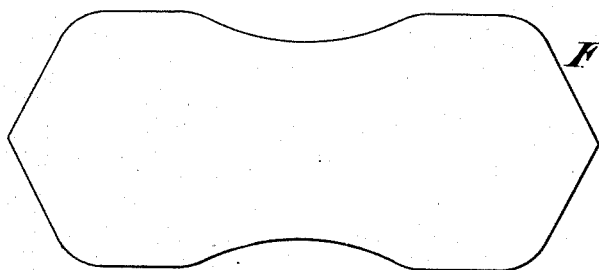
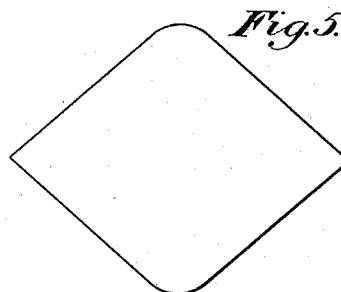
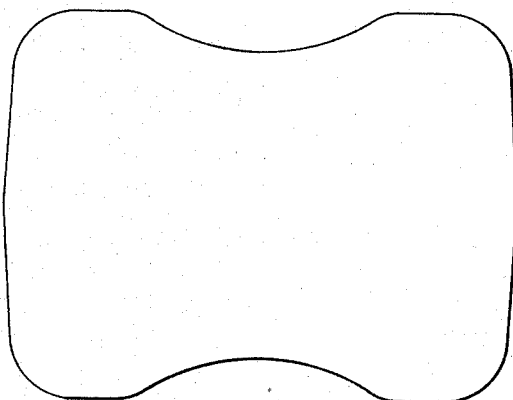
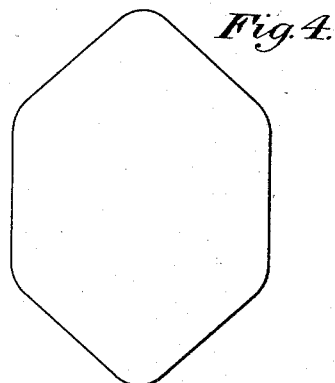
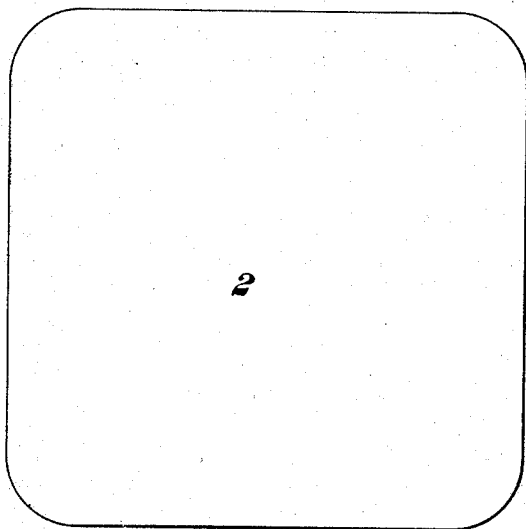


(No Model.)

T. MORRISON.
METHOD OF ROLLING METAL.

No. 522,763.

Patented July 10, 1894.



WITNESSES

M. A. Corwin
A. M. Corwin

INVENTOR

Thomas Morrison
by his attorney
N. B. Baxwell

UNITED STATES PATENT OFFICE.

THOMAS MORRISON, OF DUQUESNE, PENNSYLVANIA.

METHOD OF ROLLING METAL.

SPECIFICATION forming part of Letters Patent No. 522,763, dated July 10, 1894.

Application filed July 1, 1893. Serial No. 479,387. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS MORRISON, of Duquesne, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Methods of Rolling Metal, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which the seven figures represent the successive passes employed, showing the various reduction of the metal.

My invention relates to the reduction and elongation of metal by rolling and more particularly to the production of billets, wherein the metal is taken from the roughing mill with a cross-section of about four by four and reduced to about one and one-half inches square, though I do not wish to restrict myself to this particular size or class of work.

In the drawing, 2 represents the last pass of the roughing-mill, the metal emerging in the form of a square bar with rounded corners. The next pass flattens the metal into the form of figure 2, a longitudinal groove or depression being rolled in its top and bottom faces. The metal is then flattened further and corners produced upon its side edges by the pass of figure 3. This bar is then turned upon one of its side edges and introduced into the pass of figure 4. This is the most essential and important pass of the series and by it the metal is reduced to the flat diamond shape of the figure. The next pass reduces the metal to the shape of a diamond, the side edges of which are formed from the top and bottom faces of the original bar, while the upper and lower edges are formed from the original side faces of the metal.

The advantages of my invention will be apparent to those skilled in the art. The flat is well worked before the corners are rolled, thus insuring a good edge. This edge has always been the weakest portion of the bar

or billet when the metal was reduced without change and in the same section, as this method is very trying upon the quality of the steel. The rolling of the grooves in the first and second passes prevents overfilling of the metal when it is edged in the "flat diamond" pass, when a heavy reduction takes place and the edge changed to the flat and the corner formed from the side of the billet. By the use of this pass billets may be rolled with the same tables and other machinery as is employed in rolling rails, thus enabling a mill to be easily and readily changed from a rail mill to a billet mill, and vice versa.

By the word "flat diamond" in the claims, I intend to cover substantially the shape of figure 4.

Many minor variations may be made in the form and arrangement of the passes without departure from my invention; since

What I claim is—

1. The method of rolling, consisting in flattening the metal and rolling longitudinal depressions in its faces, and then edging the metal and rolling corners from such faces; substantially as described.

2. The method of rolling, consisting in flattening the metal twice in successive passes and forming longitudinal grooves in its faces, then edging the metal in a flat diamond pass, and rolling corners from the faces; substantially as described.

3. The method of rolling consisting in flattening the metal and working its face, then turning the metal on edge and rolling a corner from such face; substantially as described.

In testimony whereof I have hereunto set my hand.

THOMAS MORRISON.

Witnesses:

H. M. CORWIN,
GEO. B. MOTHERAL.