

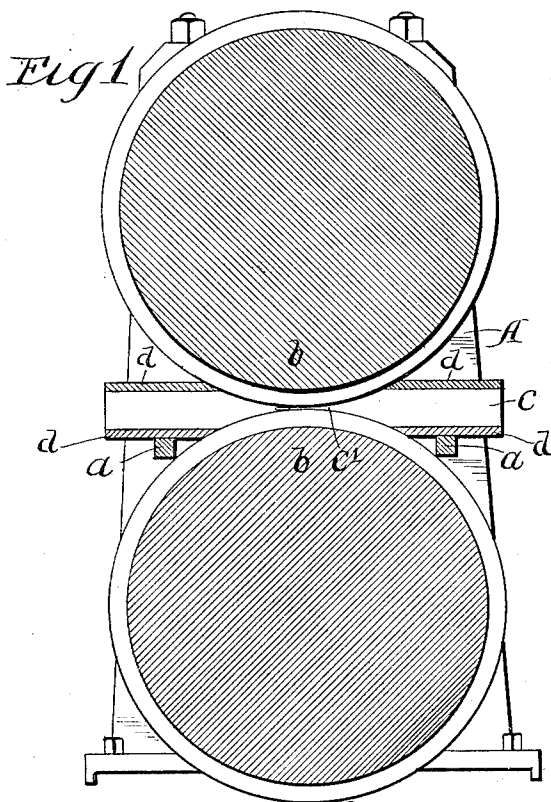
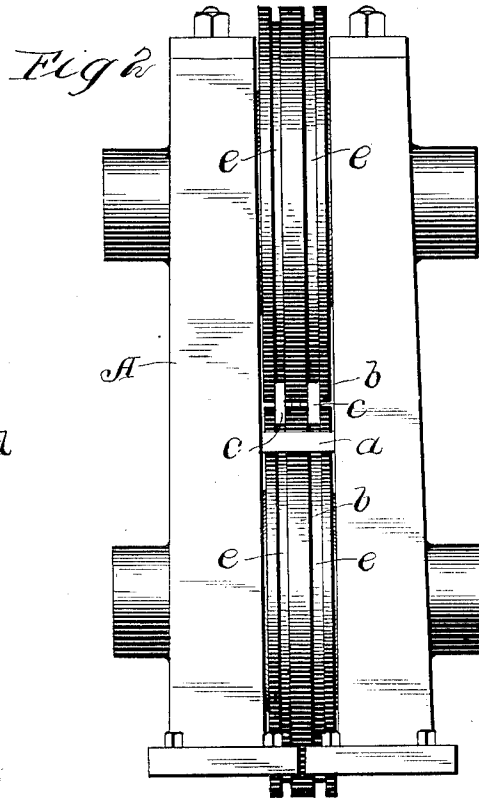
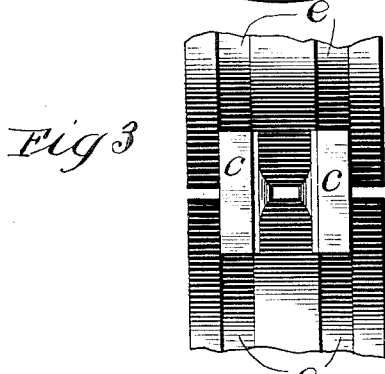
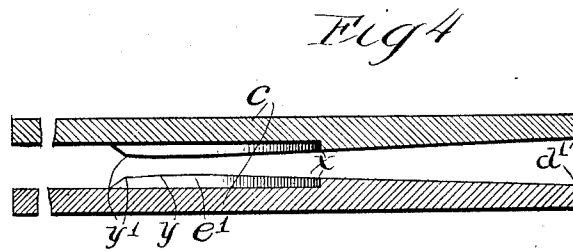
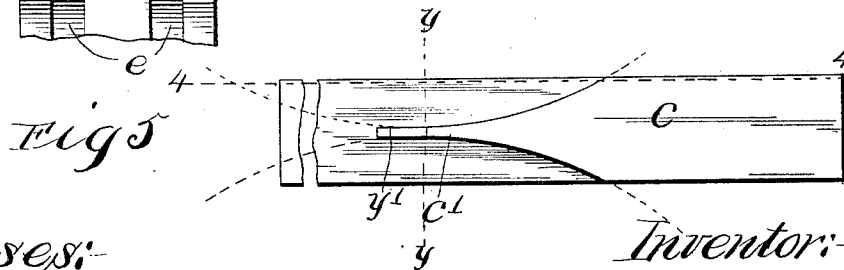
No. 659,850.

Patented Oct. 16, 1900.

T. J. JONES.
MACHINE FOR ROLLING IRON.

(Application filed Apr. 10, 1899.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS J. JONES, OF CHICAGO, ILLINOIS.

MACHINE FOR ROLLING IRON.

SPECIFICATION forming part of Letters Patent No. 659,850, dated October 16, 1900.

Application filed April 10, 1899. Serial No. 712,413. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. JONES, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Rolling Iron, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in the rolling of metal, in which billets of iron or steel are reduced to the proper size both as to width and thickness, so as to be used for various purposes, as bar or strap iron. Ordinarily these billets are run through a succession of rolls or openings in the periphery of the rolls, each opening decreasing in size, and thus the billet is gradually reduced by each successive rolling until it reaches the desired width and thickness. I aim to lessen the time which it takes as now practiced to reduce the billets and to reduce the number of operations by passing the billet between a single pair of rolls, which shall be of such size and of such power as to be capable of reducing the billet from its original width and thickness to the product which it is desired to obtain from the billet, one operation being equal to the successive operations of the series of rolls or openings therein heretofore used. I make the rolls of large diameter, so that the reduction of the billet begins a distance to one side of the center of the rolls taken vertically, and as the billet is drawn in toward the center it is gradually reduced. It is necessary to provide also for the spreading of the metal, and this is done by means of guides which extend entirely through between the rolls, being arranged parallel to each other and fitted to parallel grooves in the peripheries of the rolls, these guides being made of peculiar configuration on their working faces and being arranged in a novel relation to the rolls, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a vertical section of a machine embodying my invention, taken through the rolls in a plane perpendicular to their axes. Fig. 2 is

a front elevation thereof. Fig. 3 is a fragmentary side elevation, on an enlarged scale, of the rolls and guides adjacent to the meeting parts of the rolls. Fig. 4 is a horizontal section taken through the guides. Fig. 5 is a side elevation of one of the guides.

In the drawings, A represents a suitable framework, in which the rolls are journaled one above the other, as shown at *b*. These rolls are of large diameter, so that the curve of their peripheries is comparatively slight at the point where they approach each other, and this provides an opening between the rolls, which at a point exactly on the vertical line through the centers of the rolls represents the thickness of the finished product, this distance increasing toward the feeding-point, which equals approximately the thickness of the billet to be fed thereto, and thus as the billet is fed in the rolls grasp it and reduce it as it advances toward the center until it has been reduced to the size of the opening between the rolls at its central point, after which it passes freely through and out at the other side. It will be observed that I do not use rolls which are grooved so as to utilize the lateral walls of the grooves as a guide or check to prevent the lateral spreading of the metal, as is ordinarily the case, but I use the unbroken peripheries of the rolls, which are adjusted toward each other so as to leave a space equal to the thickness of the product desired. It is necessary, however, to provide means to prevent the lateral spreading of the metal while being rolled, and for this purpose I employ parallel guides which extend through between the rolls, upon each side of the center thereof, being fitted to corresponding grooves in the periphery of the rolls, as *e e*, which thus enables me to use guides of sufficient strength as to their width and thickness. The guides are shown at *c*. They are supported at front and rear by cross-pieces *a*, held in the frame of the machine, and these guides are covered at top and bottom by plates *d*, which extend in to near the line of periphery of the rolls, as shown in Fig. 1. The guides are of peculiar formation on their inner faces, and this formation is clearly shown in Fig. 3. The entrance to the guides is of full width longitudinally, but from this

point the walls are gradually thickened, inclining inwardly to the point x , which represents the beginning of the final reduction, the line y indicating the center of the roll on a line taken vertically thereof. While the inclination of the opposite faces of the guides is uniform from the point d' to the point x , this inclination is not continued the full width or thickness of the guides, for the reason that the pressing or reducing peripheries of the rolls enter between the guides, and to provide for this the inclined faces at top and bottom of each guide are cut away on curves approximately conforming to the peripheries of the rolls. This leaves, as shown in Fig. 3, a tongue e' , and this tongue from the point y to the point y' is made slightly tapering, so as to enlarge the space between the parts of the guides at this point. It will be understood that the billet is drawn in after being grasped by the rolls, and is not only reduced vertically, but by reason of the peculiar shape of the walls of the guide is reduced horizontally also.

I claim as my invention—

1. In a machine for rolling metal in one operation to a required form and dimensions from billets, the combination with a pair of rolls of large diameter journaled with their axes parallel with each other, and having circumferential registering grooves, and guides extending between the rolls and fitting in said grooves, said guides having their working faces inwardly inclined from their receiving

ends to a point in the plane of the axis of the rolls.

2. In a machine for rolling metal in one operation to a required form and dimensions from billets, the combination with a pair of rolls of large diameter journaled with their axes parallel with each other, and having circumferential registering grooves, reducing-guides extending through and fitting in said grooves, said guides having their working faces inwardly inclined from their receiving ends to a point in the plane of the axes of the rolls, and top and bottom plates secured to said guides acting to confine the metal between the same.

3. In a machine of the class described, the combination with rolls having registering grooves, of a guide-bar having a straight back and sides, the thickness thereof at the ends equal to the width of said grooves, and of a width greater than twice the depth of the grooves, the thickness of said guides increasing from one end to near the middle of the guide, and the thickened part of said guide being cut away at its upper and lower edges to conform to the curvature of the roll.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 25th day of March, A. D. 1899.

THOMAS J. JONES.

Witnesses:

C. CLARENCE POOLE,
CHARLES W. HILLS.