(No Model.)

J. H. BICKLEY & J. H. BICKLEY, Jr.

ROLLING MILL.

No. 457,507. Patented Aug. 11, 1891.

Fig. 2.

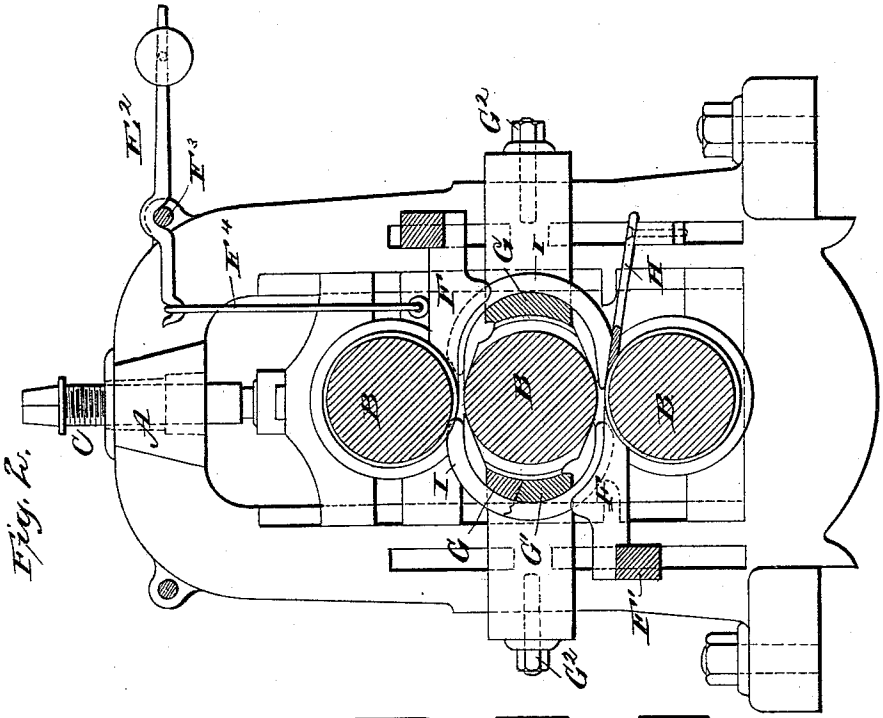
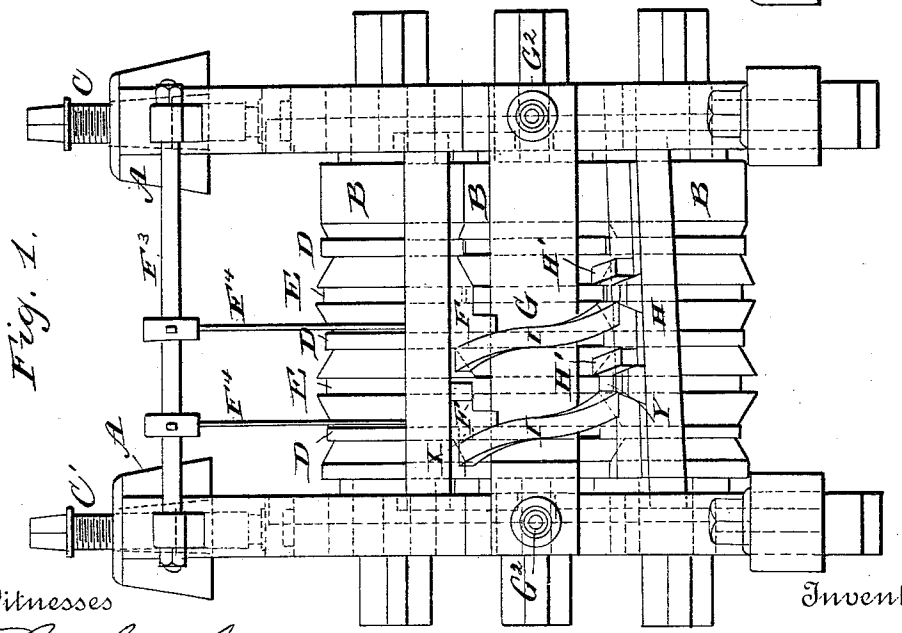


Fig. 1.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN H. BICKLEY AND JOHN H. BICKLEY, JR., OF DOVER, NEW JERSEY.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 457,507, dated August 11, 1891.

Application filed March 12, 1891. Serial No. 384,733. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. BICKLEY and JOHN H BICKLEY, Jr., citizens of the United States, residing at Dover, in the county of Morris, State of New Jersey, have invented certain new and useful Improvements in Rolling-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in mills for rolling hoop and cotton-tie iron, and it has for its objects, among others, to provide a mill for this purpose in which the iron shall be made to repeat itself on both sides of the mill until the required thickness is obtained, instead of having to be run through its entire length and then passed back again, and so on until reduced to the required thickness, as heretofore. The tongues and grooves of the rolls alternate, thus changing the division of the rolls upon the iron at each pass. We provide repeaters for turning the iron to the succeeding groove and aprons for conforming the iron to the succeeding groove. Adjusting means are provided for holding the aprons up to the rolls. Guides are also provided for pointing the iron into the groove as the repeater turns it up or down, as the case may be.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a front view of our improvement. Fig. 2 is a vertical section through the same from front to rear.

Like letters of reference indicate like parts in both views where they occur.

Referring now to the details of the drawings by letter, A designates the housings of the mill, and B the rolls mounted centrally over each other, as seen best in Fig. 2. The rolls are capable of adjustment vertically by means of the screws C, which are tapped through the tops of the housings, as shown. The tongues D and the grooves E of the rolls are arranged to alternate, as shown in Fig. 1, thus changing the division of the rolls upon the iron at each pass. Motion is imparted to the rolls in any suitable manner. As the details of adjustment of the rolls and the manner of revolving them form no part of the present invention, these features have not been fully illustrated nor dwelt upon in the description.

F are repeaters for turning the iron to the succeeding groove, and F′ are rests for supporting the said repeaters, the rests being adjustably held by the weighted levers F^2, fulcrumed on the shaft F^3, and connected with the repeaters by the rods F^4.

G are aprons for conforming the iron to the succeeding groove, the aprons being carried by the bars G′, which are rendered adjustable by the screws G^2, as shown, for keeping the aprons up to the rolls.

H is a guide-plate set at a slight incline downward, as seen in Fig. 2, and H′ are guides on this guide-plate, as seen in Fig. 1.

I are guides curved as shown in Fig. 1 and arranged at an incline, the opposite faces being formed in the shape of a spiral, the spirals upon the two faces extending in opposite directions, as seen in Fig. 1. These guides I serve to guide the iron into the groove as the repeaters turn the iron up or down, as the case may be.

The operation is as follows: The iron is placed into the rolls at the point X or groove, and is then made to take a serpentine course by the repeaters F and guides I to the next groove Y at the bottom, and so continues to repeat itself, being guided up and down and into the succeeding grooves by the repeaters and grooves on both sides of the mill until the required thickness has been obtained.

The operation is continuous. The bars do not have to be taken out and run back through the mill. This is automatically performed by the guides and repeaters.

Various modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What we claim as new is—

1. The process herein described of forming band-ties, which consists in alternately changing the division of the rolls on the iron at each pass, substantially as specified.

2. The herein-described process of rolling

iron, which consists in automatically alternately changing the division of the rolls on the iron at each pass, as set forth.

3. The process herein described of rolling metal, which consists in automatically alternately changing the course of the iron at each pass and guiding it into the succeeding groove, as set forth.

4. The combination, with the rolls, of the repeaters and the curved guides, as set forth.

5. The combination, with the rolls and the repeaters, of the curved guides having their opposite faces oppositely formed in serpentine shape, as set forth.

6. The combination, with the rolls and the repeaters, of the curved guides and the guides H′ near the terminus thereof, as set forth.

7. The combination, with the rolls and the repeaters, of the curved guides with their opposite faces oppositely curved in spiral form, and the aprons, as set forth.

8. The combination, with the rolls and the repeaters, of the curved guides, the adjustable aprons, and the guides H′, substantially as specified.

9. The combination, with the rolls and the repeaters, of the curved guides with spiral faces, the guide-plate and its guides, the aprons, and the means for keeping the aprons up to the rolls, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN H. BICKLEY.
JOHN H. BICKLEY, JR.

Witnesses:
EDWARD D. NEIGHBOUR,
JAMES H. NEIGHBOUR.