W. R. JUSTUS & W. D. YOUNG.

Machine for Rolling Horseshoe-Bars.

No. 211,024. Patented Dec. 17, 1878.

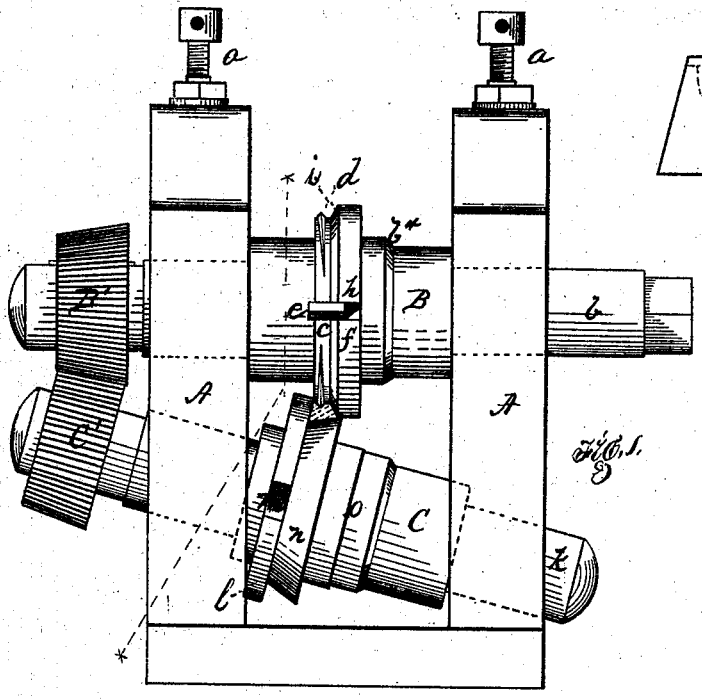

Fig. 1.

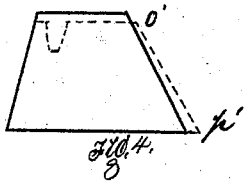

Fig. 4.

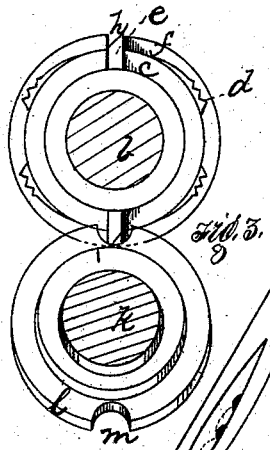

Fig. 3.

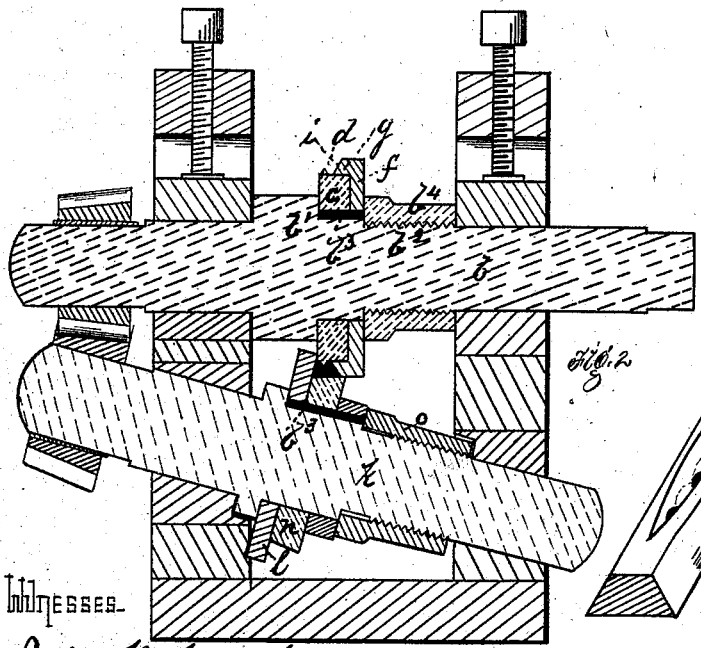

Fig. 2.

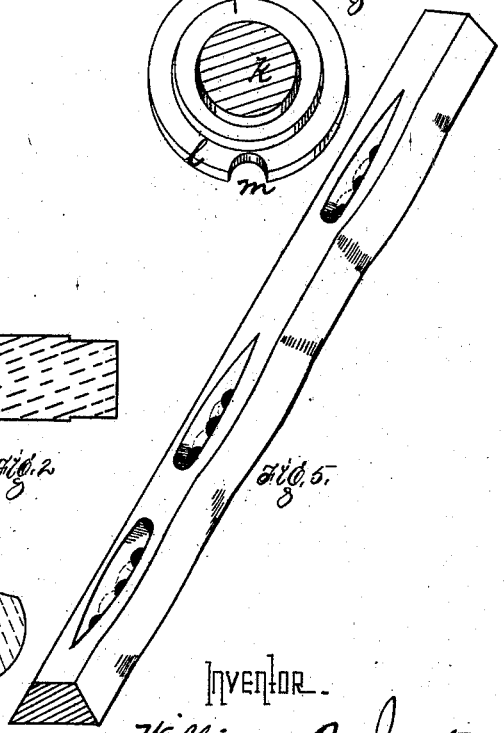

Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM R. JUSTUS, OF CHARTIERS, AND WILLIAM D. YOUNG, OF PITTSBURG, ASSIGNORS TO SHOENBERGER & COMPANY, OF PITTSBURG, PA.

IMPROVEMENT IN MACHINES FOR ROLLING HORSESHOE-BARS.

Specification forming part of Letters Patent No. **211,024**, dated December 17, 1878; application filed September 6, 1878.

To all whom it may concern:

Be it known that we, WILLIAM R. JUSTUS, of Chartiers, and WILLIAM D. YOUNG, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Rolling Horseshoe Bars, Blanks, &c.; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is an elevation of a machine embodying our invention. Fig. 2 is a vertical central section of the same. Fig. 3 is a transverse section of the rolls. Fig. 4 is a diagram of cross-section of bar used in rolling blanks, and Fig. 5 is the complete bar.

Like letters refer to like parts wherever they occur.

Our invention relates to the construction of mills for rolling horseshoe bars or blanks adapted to the manufacture of snow-shoes for horses, mules, &c.

Owing to the peculiar shape required for snow-shoe bars or blanks, it has heretofore been deemed difficult to roll the same in a single bar because of the tendency of the bar to slip in the rolls. Therefore, when not forged by hand, the shoe or blank has been made by rolling a double blank or bar with a central V-shaped groove, which, after being creased, was divided along the line of the groove to form single blanks, which were subsequently bent, punched, and finished in the usual manner. The hand-forging of such blanks requires so much labor and loss of time that it is practically too expensive to be followed in manufacturing, while the rolling in a double line of blanks is materially objectionable, in that it necessitates the severing of the blanks, which involves additional machinery and loss of time, and results in a shoe with rough inner edge, calculated to gather mud, snow, &c., and permit it to accumulate and ball upon the foot.

The object, therefore, of this invention is to construct a machine whereby the single bar or blank can be produced, and both the tedious process of forging and the imperfectly roughened or finned inner edge can be avoided.

We will now proceed to describe our invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, A A indicate housings of any desired form, wherein are journaled the rolls B C, provided with the usual boxes and housing-screws *a a*. The rolls B and C are so set in the housings that their axes, if continued, would cross, and are caused to move in unison by bevel or other appropriate gearing B′ C′, arranged on the convergent ends of the journals. The rolls B C are also preferably made up of a series of detachable rings or collars, keyed or otherwise secured on suitable shafts; but the rolls may be solid, if preferred.

b indicates the shaft of the upper roll, formed with a collar or shoulder, b^1, a thread, b^2, and a spline or key, b^3, for securing the detachable rings. *c* indicates the creaser-ring, having a straight face, provided with a series of creasers, *d*, and a series of transverse knives or cutters, *e*. This ring is wider than is required for the blank to be rolled, and is adapted to slip into the flange-ring *f*.

f represents a second ring, of greater diameter than the creaser-ring, provided with a flange, *g*, which is adapted to slip over the creaser-ring. Ring *f* is notched, as at *h*, and the flange *g* is beveled, as at *i*, so that when used in conjunction with the lower roll a groove having inclined sides is obtained. The rings *c* and *f* are held upon the shaft *b* by a threaded collar or nut, b^4. As the creaser-ring slips under the flange of the ring *f*, the width of the creaser-ring acting on the metal can be increased or diminished at will by the use of washers between the rings *c* and *f*, and the mill thus adapted to roll blanks or bars for either fore or hind shoes.

k represents the shaft of roll C, preferably constructed or shaped in general like shaft *b*—that is to say, with a bearing or shoulder, key or spline, and thread adapted to secure a series of detachable collars. On this shaft *k* are arranged two detachable work rings or collars of unequal diameter, the one, *l*, having the greatest diameter being notched, as at *m*, so that the knives of the opposite roll may pass freely, and the one, *n*, of least diameter having

a beveled periphery, whose slope should correspond to the angle at which the roll is set. The two rings *l* and *n* are secured to shaft *k* by means of threaded collar or nut *o*.

Rolls either constructed of rings or solid, and having flanges and working-faces, as specified, are so journaled and set with relation to each other that the flange or tongue *l* laps past the creasers, and the working-faces of *c* and *n* are parallel, whereby a groove having two parallel and two reversely-sloping sides is obtained, as shown in the drawing.

The metal for use in such or similarly grooved rolls is previously shaped in the strand-rolls, as indicated in diagram, Fig. 4, wherein the full line indicates the cross-section of the preliminary bar, while the dotted lines indicate the cross-section of groove of rolls B and C. It will be noticed that at the points *o' p'* the bar is scant, the object whereof is to provide for the spread of the metal displaced by the creasers *d*, and to avoid the formation of a fin on the finished bar or blank.

The operation of our devices is as follows: Having previously prepared or obtained a bar corresponding in cross-section to the diagram, Fig. 4, the same, when properly heated, is submitted to the rolls B C, which crease the bar and form it into snow-shoe bar, having two parallel and two reversely-sloping sides, the knives, when used, cutting the bar into sections corresponding to shoe-blanks. Owing to the arrangement of the grooves and the preliminary shaping of the bar, Fig. 4, the rolls deliver freely, and the product is obtained when the knives are omitted as a single bar of snow-shoe pattern of uniform shape and without finning.

If a continuous bar (or series of blanks) is desired, the knives *d* may be omitted; and when the width of the shoe is to be changed to make either fore shoes or hind shoes, the same can be done by adjusting the ring, as hereinbefore specified.

The advantages of our invention are, that we are enabled to produce single bar of rolled snow-shoe iron, or single rolled blanks, if desired, rapidly and without finning or rough edges.

Having thus described the nature and advantages of our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a machine for rolling horseshoe-bar, the combination of two flanged rolls arranged with relation to each other, substantially as described, and with the flanges of the rolls angling from the working-faces to form a groove having two parallel and two reversely-sloping sides, substantially as and for the purpose specified.

2. The combination of the rolls B C, provided with flanges *f*, *i*, and *l* and rings *c n*, substantially as and for the purpose specified.

3. The roll B, having ring *c*, with creasers and transverse knives or cutters, and ring *f*, with bevel *i*, in combination with roll C, having notched ring *l* and bevel-faced ring *n*, the said rolls having convergent axes, substantially as and for the purpose specified.

In testimony whereof we, the said WILLIAM R. JUSTUS and WILLIAM D. YOUNG, have hereunto set our hands.

WILLIAM R. JUSTUS.
WILLIAM D. YOUNG.

Witnesses:
F. W. RITTER, Jr.,
R. H. WHITTLESEY.