2 Sheets--Sheet 1.

W. M. GREENWOOD & J. N. CLARKE.

Rolls for Making Horseshoe Blanks.

No. 167,096. Patented Aug. 24, 1875.

Fig. 1.

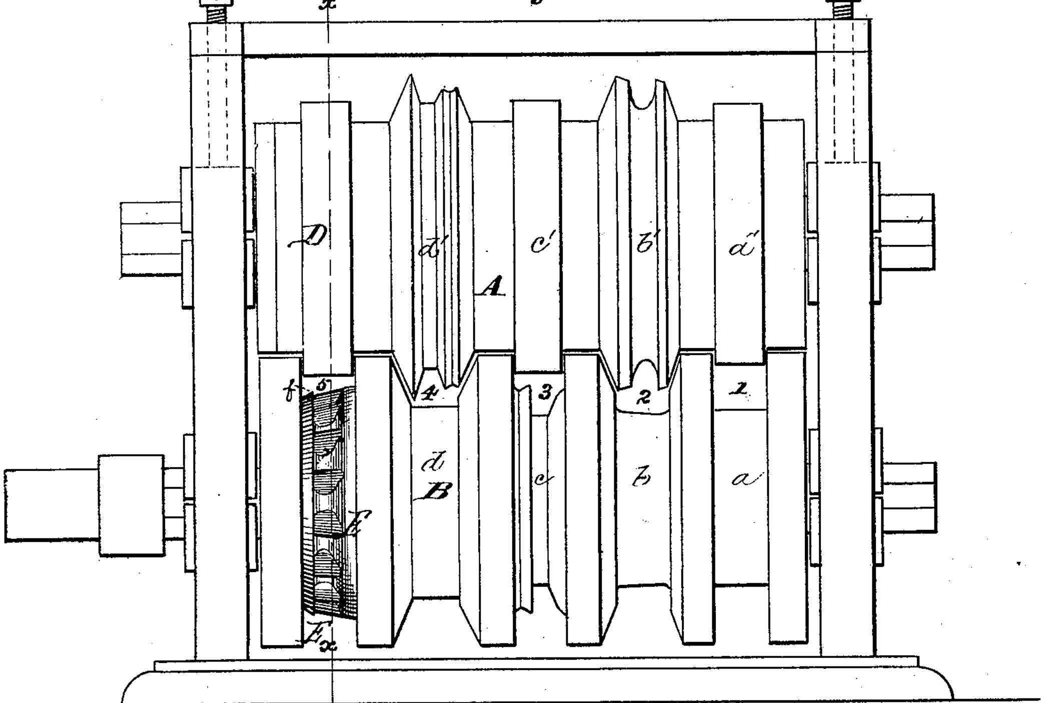

Fig. 2.

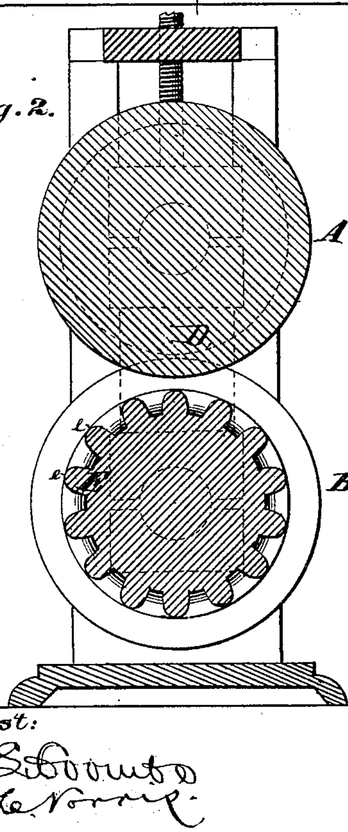

Fig. 3.

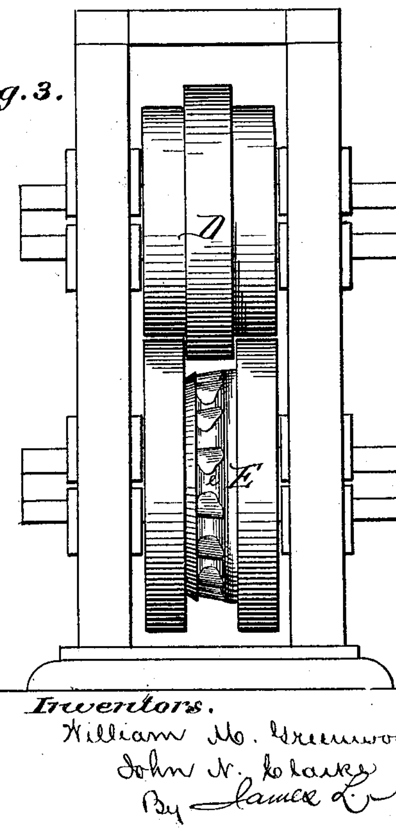

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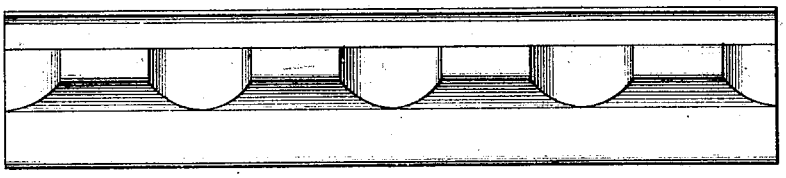
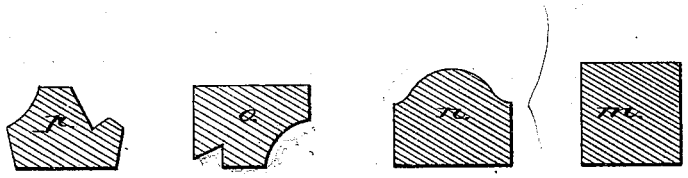
Fig. 4.





Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM M. GREENWOOD AND JOHN N. CLARKE, OF CINCINNATI, OHIO.

IMPROVEMENT IN ROLLS FOR MAKING HORSESHOE-BLANKS.

Specification forming part of Letters Patent No. **167,096**, dated August 24, 1875; application filed August 9, 1875.

To all whom it may concern:

Be it known that we, WILLIAM M. GREENWOOD and JOHN N. CLARKE, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Blanks for Horseshoes, of which the following is a specification:

This invention relates to certain improvements in machines for forming certain improved horseshoe-blanks, for which application for Letters Patent of the United States will be hereafter made.

The invention consists of a pair of rolls, one of which is provided with a die around its periphery, the face of which is formed with a series of convex projections at regular intervals, the other having a plain counter-die, the two being arranged to work together in such manner as to produce a series of corrugations upon the blank when the same is run between them, as hereinafter more fully described.

In the drawing, Figure 1 represents a front elevation of a set of rolls showing my improvements. Fig. 2 represents a section through line *x x* of Fig. 1. Fig. 3 represents a front view of a modification of the rolls; and Fig. 4 represents several detached views of the blank in process of formation.

The letters A and B represent a pair of rolls journaled in standards C C at each end, and arranged in such relative positions that the dies on their peripheries will work properly together. The roll B is provided with a series of dies, *a b c d*, and the roll A with a series of counter-dies, *a′ b′ c′ d′*, by which the strip of metal or blank is gradually brought to proper shape, previously to being passed through between the corrugating-dies D E, said blank being formed by successive passes between the dies and counter-dies, beginning with *a* and *a′*, and ending with *d* and *d′*, by which it is formed with a thin web to fit the sole of the foot, and a projection for the tread, the rim being the portion to be corrugated in the next operation, when the blank is passed between the dies D and E. The die E is preferably formed around the periphery of the roll B, its face being constructed with a series of convex projections or teeth, *e*, at regular intervals apart. The counter-die E is formed upon the upper roller, and has a plain face, which works into the die D upon the lower roll. Around the face of the lower die is formed an angular shoulder, *f*, which forms the nail-crease in the blank.

The operation of the rolls is as follows: The metallic bar is first passed between the dies *a* and *a′*, by which a shape in cross-section, similar to that illustrated by the letter *m*, Fig. 4, is given. It is then passed between die *b* and *b′*, which gives it the shape shown by letter *n*, Fig. 4, after which it is reversed and passed between dies *c* and *c′*, taking the shape shown by letter *o* of the last-mentioned figure, and is then finally brought to the proper shape to be subjected to the action of the corrugating rolls by passing between the dies *d* and *d′*, which form it, as indicated by letter *p*, Fig. 4. The blank in this last-mentioned condition is passed between the dies D and E, by which the corrugations in the rim are formed, and the nail or fulling crease produced.

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

The combination of the rolls A and B, one provided with a die with convex projections and shoulder upon its face for forming corrugations and nail-crease upon the shoe-blank, the other being provided with a plain counter-die, the two arranged to work together, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands in the presence of the subscribing witnesses.

W. M. GREENWOOD.
JOHN N. CLARKE.

Witnesses:
FRED. A. JOHNSON,
P. J. JONES.