2 Sheets—Sheet 1.

F. HOLUB.

Machinery for the Manufacture of Horseshoe-Blanks.

No. 219,096. **Patented Sept. 2, 1879.**

Fig. 1.

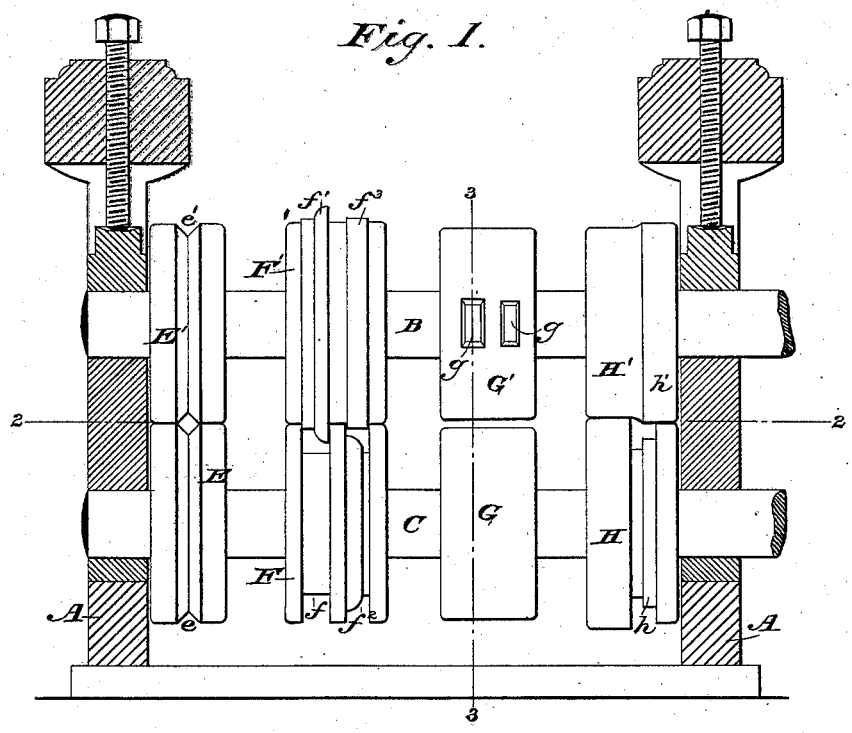
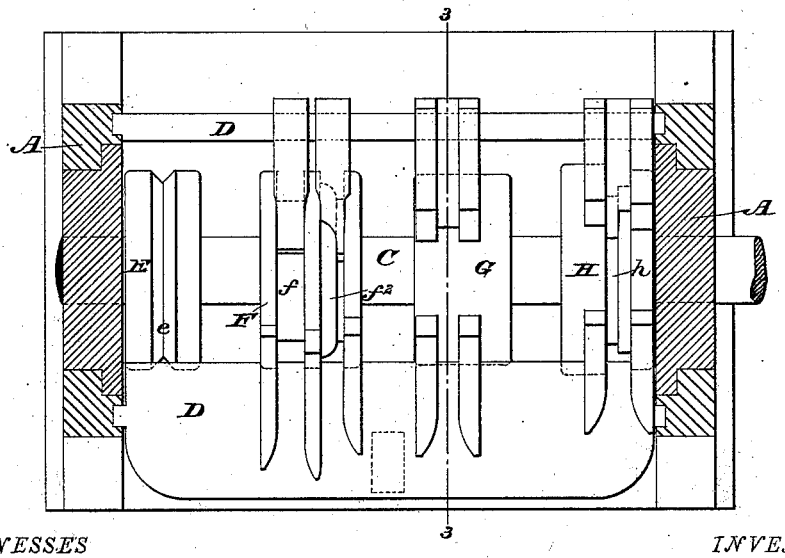


Fig. 2.



WITNESSES

Wm A Skinkle

Geo W Breck

INVENTOR

Frank Holub.

By his Attorneys

Baldwin, Hopkins & Peyton

2 Sheets—Sheet 2.

F. HOLUB.

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Fig. 3.

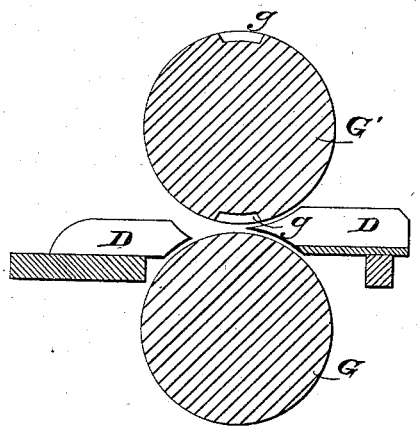


Fig. 4. Fig. 4a.

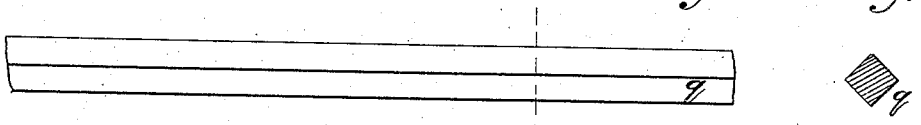


Fig. 5. Fig. 5a.

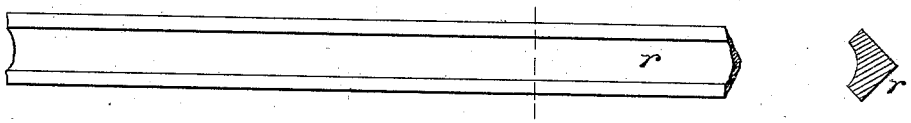


Fig. 6. Fig. 6a.

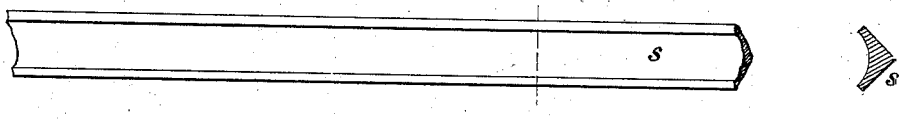


Fig. 7. Fig. 7a.

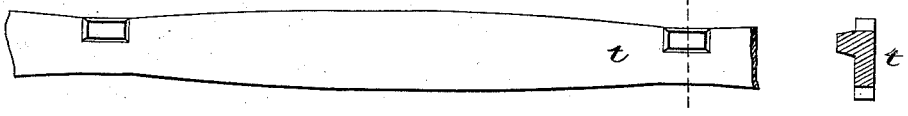
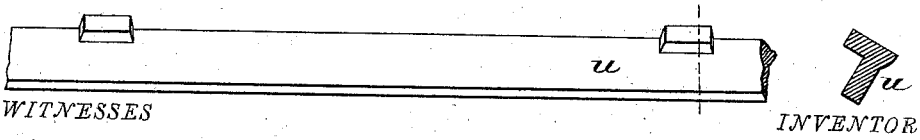


Fig. 8. Fig. 8a.



WITNESSES

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INVENTOR

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By his Attorneys

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UNITED STATES PATENT OFFICE.

FRANK HOLUB, OF CHICAGO, ILLINOIS, ASSIGNOR TO NATIONAL HORSE-SHOE COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINERY FOR THE MANUFACTURE OF HORSESHOE-BLANKS.

Specification forming part of Letters Patent No. **219,096**, dated September 2, 1879; application filed May 16, 1879.

To all whom it may concern:

Be it known that I, FRANK HOLUB, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Machinery for the Manufacture of Horseshoe-Blanks, of which the following is a specification.

The object of my invention is to form from a billet by a single heating, and by the use of a series of rolls, a bar suitable for making horseshoe-blanks, and, by continuing the reducing and shaping operation, to form a connected series of blanks from the bar.

My apparatus, I may say in general terms, consists of a series of rolls mounted in suitable housings, and provided with a suitable number of grooves for reducing the billet and forming it into a rectangular bar, and also provided with a suitable number of dies for immediately afterward forming the bar into a connected series of blanks.

My invention is an improvement upon that shown in my United States Letters Patent No. 205,386; and consists in the peculiar formation and combination of parts, hereinafter described, and then specified in my claim.

In the accompanying drawings, illustrating my improvement, Figure 1 is a front elevation of a horseshoe-blank-forming machine, or so much thereof as is necessary to show my invention partly in section. Fig. 2 is a plan view of the same, partly in section, through the line 2 2 of Fig. 1. Fig. 3 is a vertical transverse section through the lines 3 3 of Figs. 1 and 2. Figs. 4, 5, 6, 7, and 8 show the bar at different stages of the operation of forming into a connected series of horseshoe-blanks; and Figs. 4^a, 5^a, 6^a, 7^a, and 8^a are cross-sections of the same on the transverse lines of Figs. 4, 5, 6, 7, and 8.

A indicates a frame of a rolling-mill of any ordinary pattern; B, an upper, and C a lower, series of rolls, the former mounted adjustably therein; and D D, tables provided with guideways for conducting the bars into the bite of the rolls.

As in the case of my patented invention above referred to, I propose in practice to employ three-high rolls, so that the bars can be passed through from one side and back from the other; but it will be sufficient to describe in detail two series of rolls, as when three-high rolls are employed the top series will be exactly like the bottom series.

E E′ indicate the first pair of rolls, provided with grooves *e e′*, by which the heated billet is formed into a rectangular bar, *q*, (shown in Fig. 4,) suitable for making horseshoe-blanks. As set out in my said patent, there may be several such grooves in this pair of rolls, differing in size, the billet being first passed through the largest, and successively through the others, the grooves *e e′* being supposed to represent the smallest in such a series of reducing-grooves; but there is nothing novel in this.

The rectangular bar *q* is next passed to the pair of rolls F F′, which are provided with grooves and dies, (marked $f f^1$ and $f^2 f^3$.) The shapes of these parts are such as I have found best adapted for my purpose, and are important to the success of the operation it is the object of my invention to accomplish.

In my said patent I propose to employ grooves and dies that would form angle-bars—thus, L; but I have found in practice that there are serious difficulties with this plan; that greater power than is necessary is required, and that greater wear of the rolls and dies than is desirable is occasioned. I have, therefore, after numerous and costly experiments with full-sized working machinery, and at great expense, finally found complete success and satisfactory economy in my improved rolls, in which *f* is a rectangular groove, and f^1 is a die entering the groove, and adapted to form a bar, *r*, of the outline in cross-section shown in Fig. 5^a. f^2 is a groove or die of the form shown, and f^3 an annular projection or die fitting in the part f^2, so that the effect is to form a bar, *s*, of the outline in cross-section shown in Fig. 6^a. The groove and die, *f* and f^1, it will be seen, initiate the form of a bar rectangular on one side and concave on the other, which is completed in that form by the dies f^2 and f^3. This is much the best form for the next succeeding operation of forming the toe-calk.

In the plan of forming the toe-calk set out in my said patent, although practicable by the means there shown, I found by experience there were serious defects that I have not

found to attend my present improved machine for forming the calks, that I will now describe.

G G′ indicate a pair of rolls adapted to flatten and form the calks upon the bars *s*. The roll G is a plain roll, and the roll G′ is similar, except that it is provided with a series of dies or calk-recesses, *g*, on opposite sides. These calk-recesses are alike, except merely in size, and either size may be used, according to the size of calk desired to be produced. The roll G′ might be made small enough so that its circumference would only measure the proper length of one blank, in which case but one calk-recess or series of recesses would be formed; and it might also be very large, so as to have several recesses or series of recesses; but I prefer the size indicated—that is, such that recesses on opposite sides will be of the right distance apart. The bar *s*, being passed through the rolls G G′, will be flattened except at the points opposite the calk-recesses, and will be given the form represented by the bar *t*, Fig. 7. This bar *t* is next passed through the rolls H H′, provided with the dies *h h′*, which finish it in the manner shown by the bar *u* in Fig. 8, as will be apparent from the drawings without minute description.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a horseshoe-blank-forming machine, the combination of the rolls F F′, provided with the grooves and dies, $f\,f^1$ and $f^2\,f^3$, all of substantially the conformation shown, the rolls G G′, the latter provided with one or more calk-recesses, *g*, and the rolls H H′, provided with the dies *h h′*, of substantially the conformation shown, the combination being and operating substantially as and for the purposes set forth.

In testimony whereof I have hereunto subscribed my name.

FRANK HOLUB.

Witnesses:

CHAS. W. REQUA,

THOS. GILLESPIE.