(No Model.)

F. HOLUB & C. S. LOCKE.

Machine for Making Bars for Horseshoe Blanks.

No. 242,534. **Patented June 7, 1881.**

Fig. 1.

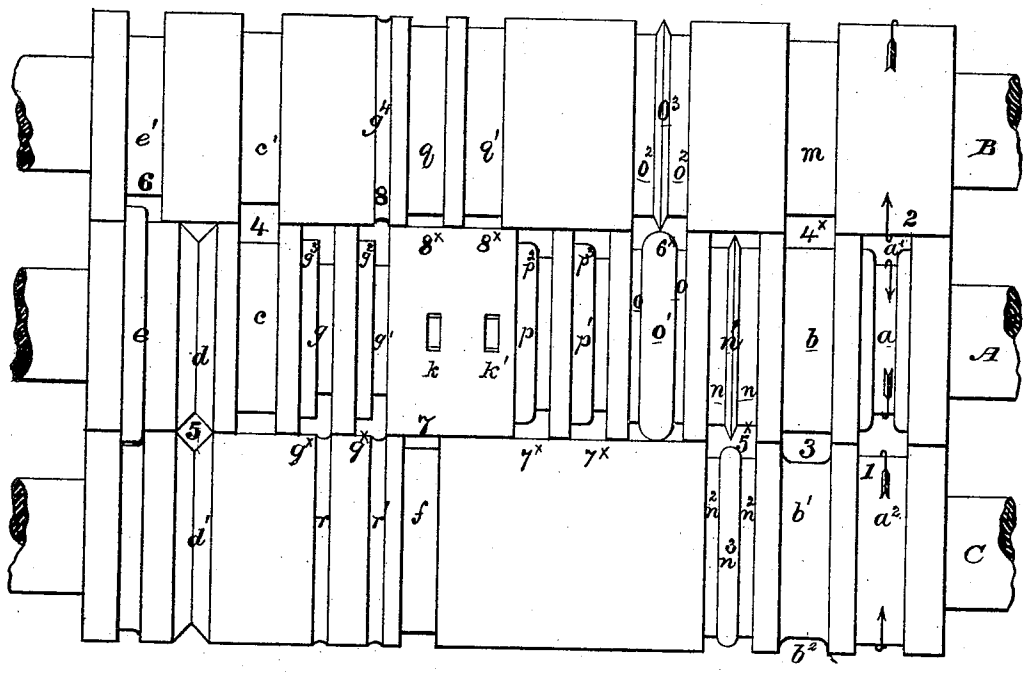

Fig. 7. *Fig 6.* *Fig 5* *Fig. 4.* *Fig. 3.* *Fig. 2.*

Fig. 8.

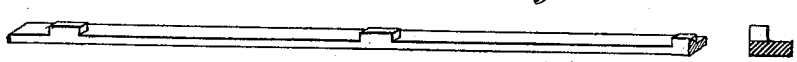

Fig. 9.

WITNESSES

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FRANK HOLUB AND CHARLES S. LOCKE, OF CHICAGO, ILLINOIS.

MACHINE FOR MAKING BARS FOR HORSESHOE-BLANKS.

SPECIFICATION forming part of Letters Patent No. 242,534, dated June 7, 1881.

Application filed September 21, 1880. (No model.)

To all whom it may concern:

Be it known that we, FRANK HOLUB and CHARLES S. LOCKE, both of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machinery for Making Horseshoe-Blanks, of which the following is a specification.

It is our purpose in devising this machinery to provide for the manufacture of connected series of horseshoe-blanks from old, worn, or refuse steel rails, or from crop ends of rails, which can be cheaply obtained, and which furnish stock of excellent quality and of approximate shape for the purpose. Such rails are of varying dimensions in cross-section, and it is our purpose to construct a single machine adapted to accommodate their different sizes. We have heretofore patented a machine in United States Patent No. 227,010 for forming series of horseshoe-blanks from the base portions of such rails; but our present invention relates to forming series of horseshoe-blanks from the top portions of such rails.

In the accompanying drawings, Figure 1 is a front elevation of so much of a set of three-high rolls as is necessary to illustrate our invention, which consists in the combinations of particular parts for accomplishing the objects above stated, as hereinafter definitely expressed in our claims.

In this figure, 1, A indicates the middle roll, B the upper roll, and C the lower roll, which rotate in the directions indicated by the arrows. These rolls we have provided with various peculiar dies, as follows:

a indicates the initial annular die in roll A, of the outline in cross-section clearly shown at a', and a^2 indicates a coincident annular die in roll C, of rectangular cross-section.

b indicates an annular die in roll A, of rectangular cross-section, and b' a coincident annular die in roll C, of the outline in cross-section clearly shown at b^2.

c indicates an annular die in roll A, of rectangular cross-section, and c' a corresponding rectangular die in roll B.

d indicates an annular right-angled-triangular die in roll A, and d' indicates a like coincident die in roll C.

e indicates an annular projecting die on roll A, and e' an annular rectangular die in roll B, into which the die *e* projects.

f indicates an annular rectangular die in roll C, and coincident with it in the roll A is the calk-die *k*.

g indicates an annular die in the roll A, of angular cross-section, so as to form the shoulder g^2, and g^4 indicates an annular concave die in the roll B.

The dies just described, in some instances, as will be perceived by the drawings, being opposite to and operating in conjunction with the plain surfaces of one or other of the coincident rolls, are designed to form a single series of horseshoe-blanks from an upper section of either a large or a small-sized steel railroad-rail of the ordinary form known as "T-rail" at a single heating of the section or billet. Such a portion of a rail is shown in cross-section in Fig. 2, and, as will be perceived, it embraces the tread and a part of the web of the rail, the lower portion of the web and the flanges, as indicated in dotted lines, being removed. It will be noted that eight passes through the rolls are provided for, starting at No. 1 from the front of the rolls, and these passes would all be necessary if a large-sized rail-billet should be worked to form a single series of blanks; but ordinarily only the smaller-sized rail-billets would be used to form a single series of blanks, and in that case only seven passes through the rolls would be required, commencing at No. 2 from the rear. Suitable guides and supports being provided in front and rear of the rolls, as usual, if desired, and the rolls being in operation, revolving in the direction indicated by the arrows, and a small-sized rail-billet being properly heated and passed through the rolls at No. 2, it would be given the shape in cross-section shown in Fig. 3. Being then returned through the rolls at No. 3, it would be further reduced and rendered more nearly rectangular in cross-section. Being next passed through at No. 4, it would be made square in cross-section. Being next returned at No. 5, it would be reduced and elongated, but remain square. Being next passed through at No. 6, it would be formed into an angle-bar, as shown in cross-section in Fig. 6. Being next returned at No. 7, it would be formed into a rectangular calked bar, as shown in Fig. 8. Being finally passed through at No. 8, it would emerge in front of the rolls a completed series of horseshoe-blanks with the

calks elongated and the front edge rounded, as shown in Fig. 9. The diameter of the rolls and the position of the calk-dies k and k' must, of course, as usual, be such that the calks will be formed at the proper distance apart for a horseshoe of given size, so that the series of blanks can be cut into single blanks at equal distances between the calks.

As it may frequently be convenient to alternately pass through large and small sized rail-billets, it is a matter of considerable economy to provide for it in the same machine, and accordingly we have made, in connection with the devices just described, in the same set of rolls the following dies and cutters for making simultaneously two series of horseshoe-blanks from a single large-sized rail-billet.

In Fig. 1, m indicates an annular die of rectangular cross-section in the roll B, coincident with the die b in the roll A.

n indicates an annular die, and n' a cutter projecting from its center, in the roll A.

n^2 indicates an annular rectangular die in the roll C, and n^3 a convex projection from its center, both being coincident with the die n and cutter n'.

o indicates an annular rectangular die in the roll A, and o' a convex projection from its center.

o^2 indicates an annular rectangular die in the roll B, coincident with the die o, and o^3 a cutter projecting from its center and meeting the convex projection o'.

p p' indicate annular dies in the roll A, of angular cross-section, so as to form shoulders p^2 p^3.

q q' indicate annular dies in the roll B, rectangular in cross-section, and the calk-dies k and k' are coincident with them, so as to properly do the calking.

The annular dies g and g' in the roll A, of angular cross-section, so as to form shoulders g^2 g^3, are designed to finish the two series of blanks and elongate the calks, while working in conjunction with the annular concave dies r r' in the roll C to round the edges of the series of blanks.

The dies and cutters just described, including Nos. 1 and 2, as will be perceived, provide for nine passes of the billet through the rolls, beginning at No. 1 from the front. The first pass will somewhat compress and reduce the billet, and the return pass at No. 2 will give it the form in cross-section shown in Fig. 3. The next pass through at No. 3 will bring it nearer to rectangular form in cross-section, and the return at No. 4^x will perfect its rectangular outline, as shown in Fig. 4. The next pass, at No. 5^x, will partially sever it longitudinally in the center, as shown in Fig. 5, and the return at No. 6^x will complete the severance, as shown in Fig. 6. The two equal parts x and y are next passed through at No. 7^x and given the form in cross-section shown in Fig. 7, and the return at No. 8^x will form the calked blank, as shown in Fig. 8. Finally, the pass at No. 9^x will finish the two series of blanks and elongate the calks and round their front edges, as shown in Fig. 9.

With this construction it will be perceived that a large rail-billet may be entered at No. 1, and after it has passed No. 2 a smaller billet may be entered there, and the two may proceed on their respective courses through the rolls, both undergoing the process of manufacture at the same time, and the next billet that is entered in the machine may either be a large or small one. All that will be necessary is that, for convenience of working, the small billets be placed in rear of the machine for heating and delivery there and the larger billets be placed in front of the machine for the same purpose.

Having thus described the construction and mode of operation of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a set of rolls, of the dies at Nos. 1, 2, and 3 with those at Nos. 4^x, 5^x, 6^x, 7^x, 8^x, and 9^x, including the cutters and projections at Nos. 5^x and 6^x, and with those at Nos. 4, 5, 6, 7, and 8, substantially as shown and described, whereby a rail-billet of the cross-section shown in Fig. 2, of large size or of small size, may be entered at will and both be undergoing manufacture at the same time in one set of rolls.

2. The combination of the dies at Nos. 1, 2, 3, 4^x, 5^x, 6^x, 7^x, 8^x, and 9^x, including the cutters and projections at Nos. 5^x and 6^x, substantially as shown and described, whereby two series of horseshoe-blanks may be simultaneously formed from a rail-billet of the cross-section shown in Fig. 2.

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Witnesses:
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