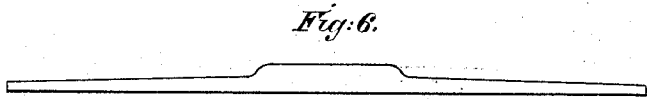
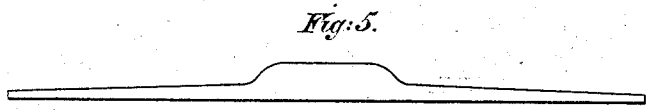
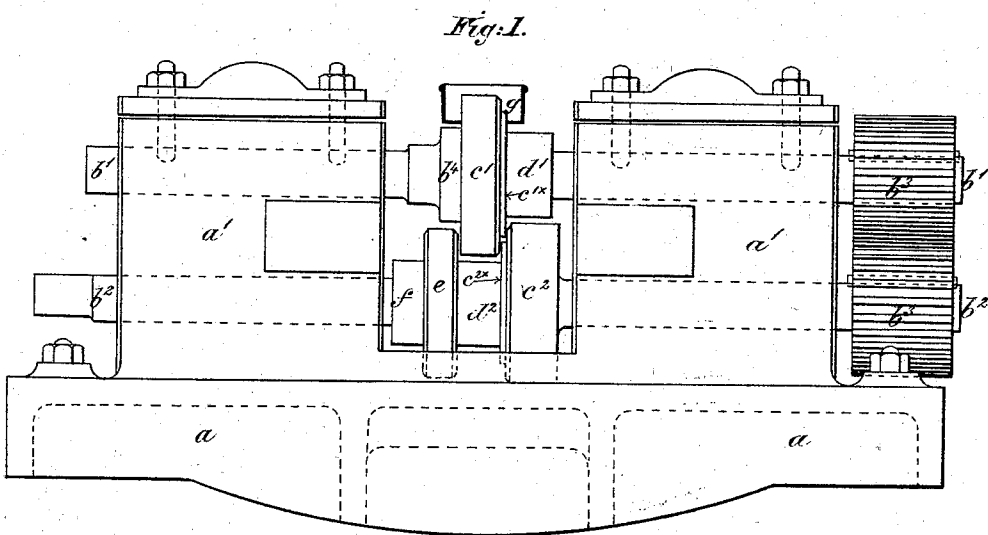
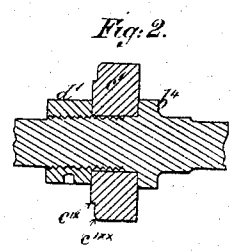
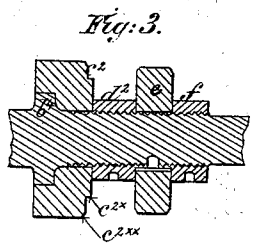
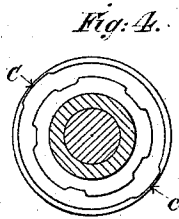


J. & J. A. HUGGETT.

Rolls for Rolling Iron for Horseshoe Nails.

No. 138,499.

Patented May 6, 1873.



Witnesses
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J. Dean

Inventors
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UNITED STATES PATENT OFFICE.

JOHN HUGGETT, OF EASTBOURNE, AND JOHN ALBERT HUGGETT, OF CLAPHAM, ENGLAND.

IMPROVEMENT IN ROLLS FOR ROLLING IRON FOR HORSESHOE-NAILS.

Specification forming part of Letters Patent No. 138,499, dated May 6, 1873; application filed January 21, 1873.

To all whom it may concern:

Be it known that we, JOHN HUGGETT, of 36 Terminus Road, Eastbourne, in the county of Sussex, England, and JOHN ALBERT HUGGETT, of 21 Union Grove, Clapham, in the county of Surrey, England, both subjects of the Queen of Great Britain, have invented or discovered new and useful Improvements in Rolling Iron for the Manufacture of Horse-Nails; and we, the said JOHN HUGGETT and JOHN ALBERT HUGGETT, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

This invention has for its object improvements in rolling iron for the manufacture of horse-nails. In rolling iron for the manufacture of horse-nails we take a flat nail-rod and cause it to pass on edge between rolls, by which means we reduce the width of the rod down to the thickness of the stem of the nail, but leave the rod of the original thickness, or nearly so, at the parts which are to form the heads of the nails.

The rolling machinery consists of two rolls. The periphery or rolling-surface of one roll is a plain cylinder, while that of the other has recesses in it at distances apart about equal to twice the length of the nails to be made. At one end of the periphery or rolling-face of each roll there is a flange, with a face at right angles to the axis; and these flanges revolve in contact each with a face formed on the other roll at the other end of the periphery or rolling-surface, so that the rod, when passed between the rolls, is compressed between the rolling-faces and its width diminished at intervals, while at the same time the rod is confined laterally between the two flanges of the rolls, so that its thickness may not be materially increased. The endwise thrust of these rolls, which is very considerable, we support by mounting a collar on the axis of one of them—say the lower one—and the collar bears against the back of the flange of the other or upper roll, so that the upper roll is confined between the flange of the lower roll and the collar upon its axis. The collar is adjustable, and is held in its place by a nut.

In order to cause the nail-rod to enter between the rolls without loss of time, as it requires to be very hot when rolled, we form the flanges of the rolls in such a manner that as soon as the rod touches them they turn it on edge and lead it correctly to the eye of the rolls. For this purpose we bevel off the edges of the flange of each roll, and we form a projection or projections upon the beveled surface, or we roughen it. The nail-rod at a welding heat, as it is drawn from a furnace, is thrown down a guide-trough; its end strikes first on the beveled edges of the flanges of the rolls, and, as these are traveling at high velocity in opposite directions, they immediately turn the rod and direct it into the eye of the rolls. In order to cause the rod to deliver out of the cavities of the roll, these cavities, at every revolution of the roll, are filled with tar, which, as it thickens with use, is kept at a sirupy consistency by the addition of oil. This is effected by causing the roll, during a part of its rotation, to be immersed in the tar or semi-liquid material. In this way, also, a lubricating-film is maintained between the lower roll and the collar which supports it.

In order that our said invention may be most fully understood and readily carried into effect, we will proceed to described the drawing hereunto annexed.

Description of the Drawing.

Figure 1 is a front elevation of the rolling machinery. Fig. 2 is a section of the upper roll, and Fig. 3 of the lower roll, with the parts connected therewith. Fig. 4 is a side view of the upper roll, with its shaft and lock-nut in section.

a is the bed-plate, with the two housings or bearings *a'* *a'* upon it. In these housings the upper and lower shafts *b*¹ and *b*² are carried. The lower shaft is coupled at one end with the driving-power, and at the other it is geared with the upper shaft by the pinions *b*³ *b*³. Each shaft has a collar, *b*⁴, forged upon it, and the rolls *c*¹ and *c*² abut on these collars, against which they are securely locked by the lock-nuts *d*¹ and *d*². The lower shaft also carries the collar *e*, which is locked in its place between the nut *d*² and a second nut, *f*, and the

parts are accurately fitted, so that the roll c^1 is just able to turn freely between the end of the roll c^2 and the collar e . As soon as the parts become at all worn they are re-turned to maintain an accurate fit. c^{1*} and c^{2*} are the rolling-surfaces which come in contact with the highly-heated nail-rod, and the upper one is recessed, as is shown in Fig. 4, to leave bulbs to form the heads of the nails. c^{1**} and c^{2**} are the flanges of the rolls which prevent the spreading or widening of the nail-rod, the collar e keeping the flange of one roll close up to the end of the rolling-face of the other roll. The edges of these flanges are beveled, and have each two projections, C , upon them, as is shown in Fig. 4, which, striking the ends of the nail-rods as they are slidden down a guide-trough to the rolls, as already described, turn them on edge, and cause them at once and without any delay to enter the eye of the rolls. g is a trough with an opening in the bottom, through which the roller c^1 projects. The trough g is kept full of coal-tar, which is thinned, when necessary, with coal-oil. In this way the nail-rod is prevented from sticking in the recesses of the upper roll. The rod after it has been thus rolled is of the form shown in Fig. 5; it is made into nails by processes which are not claimed under this patent, but which are, first, passing the rod in a cold state between two hard plain-surfaced rolls of large diameter to press down the broad parts of the rod left by the rolling operation above described to the thickness of the head of the nail, and to spread the metal laterally. Fig. 6 shows the form thus produced. Guides are applied to direct the rod and prevent it turning over while it is passing between these

rolls. Second, the rod is cut up to form the nail-blanks; it is divided transversely in the middle of each bulb, and obliquely midway between the bulbs. Third, by means of heading-dies the head of the nail is more completely formed; and, fourth, the nail is finished by means of a machine such as is described in our American patent dated the 8th day of October, 1872, No. 132,082.

Having thus described the nature of our said invention, and the manner of performing the same, we would have it understood that we claim as our improvements in rolling iron for the manufacture of horse-nails—

1. The combination and arrangement of rolling machinery, substantially as before set forth, consisting of two rolls, each with a flange at one side only of its rolling-face, and of an adjustable collar for sustaining the end thrust of the rolls, and for the endwise adjustment of them after re-turning.

2. The method of causing the nail-rod to enter truly between the rolls by beveling or inclining the edges of their flanges, substantially as described.

3. The use of tar or such like viscous fluid to prevent the nail-rod sticking in the cavities of the rolls, substantially in the manner as described.

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