

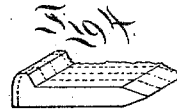
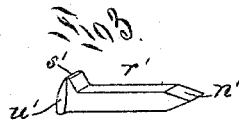
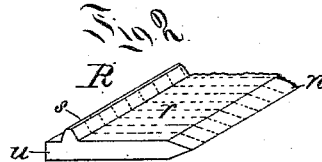
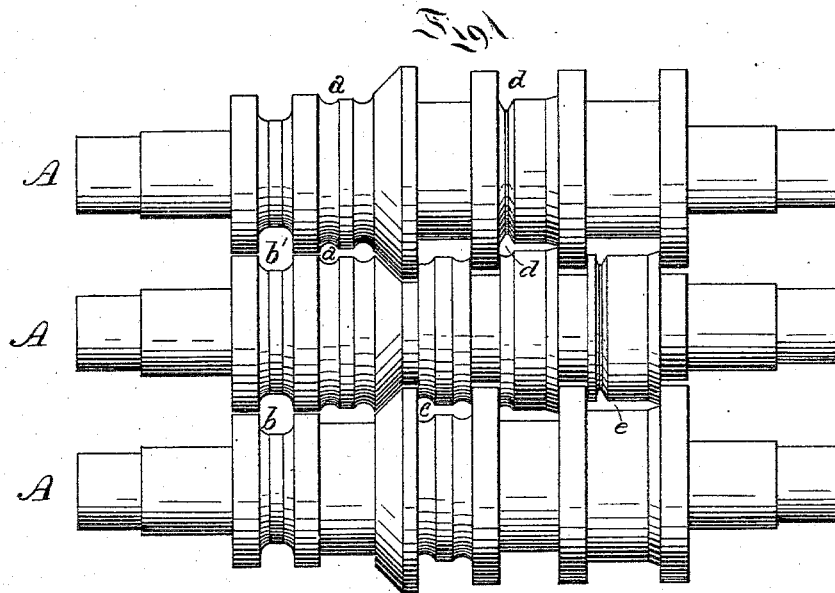
(No Model.)

H. GREER.

SPIKE ROLL.

No. 305,809.

Patented Sept. 30, 1884.



WITNESSES:

C. M. Clark
R. A. Whittelsey

Howard Greer INVENTOR

By George H. Christy
Atty.

UNITED STATES PATENT OFFICE.

HOWARD GREER, OF CHICAGO, ILLINOIS.

SPIKE-ROLL.

SPECIFICATION forming part of Letters Patent No. 305,809, dated September 30, 1884.

Application filed December 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, HOWARD GREER, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented or discovered a new and useful Improvement in Rolls for Spike-Blanks; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a front view of a three-high rolling-mill. Fig. 2 is a perspective view of a blank produced in a mill shown in Fig. 1. Fig. 3 is a perspective view of a completed spike. Fig. 4 is a view of a modified form of blank.

My present invention relates to a system of grooves incorporated into suitable metal rolls for the production from railway-rails or the crop or fag ends thereof, or from a suitably-shaped billet, of a bar or blank properly shaped and with proper disposition of the metal therein, such that when cut or sheared into spike-blanks by transverse parallel cuts the spike-blanks so made may by an upsetting operation be formed into completed spikes.

So much of the operation above referred to as relates to the transverse shearing or cutting of the bar into separate spike-blanks and the finishing or completing the same is included in the subject-matter of application No. 113,387, already filed by me, and the present invention relates to the rolls and blank or bar as produced and ready for cutting.

In the drawings, A A A represent the rolls of a three-high mill and provided with a suitable arrangement of grooves for the working of the present invention. The rail or crop or fag end thereof to be worked is first passed, after being properly heated, through the grooves *a* of the two upper rolls, which grooves are suitably formed and proportioned for the reduction of the head and flange of the rail, and also for forcing a portion or all of the metal displaced by such reduction into the web portion of the rail. In order still further to thicken up the web portion, the bar, after leaving the pass *a*, is given a quarter-turn and passed through the grooves *b* of the two lower

rolls, which grooves are suitably proportioned for giving this result, and a like but reverse pass may be made through the grooves *b'* for the purpose of effecting a further thickening of the web, as may be desired, and also so as to bring the bar back for a pass through the grooves *c*, which grooves are properly shaped and proportioned for further reducing the thickness of the edge portions of the bar and also with reference to so disposing the metal that in subsequent working and especially in the finishing pass the desired uniform reduction and elongation will be secured.

The form of bar or blank sought for in this invention is that represented at R in Fig. 2. One edge of this bar or blank has a double bevel, *n*, such as is desired in the point *n'*, Fig. 3, of the finished spike. The body portion *r* of the blank R is made of the width equal or about equal to the length of the shank *r'* of the finished spike, and a rib, *s*, is made at or along near the opposite edge of the bar R, and of proper form and size to give the necessary metal for the overhanging lip *s'* of the finished spike.

In the preferred form of my invention I make a rib, *u*, in the plane of the body portion *r*, and outside of the rib *s*, and in this rib *u*, I provide a sufficient quantity of metal from which, by an upsetting or swaging blow, given by a suitable heading-die, as described in the application above referred to, I secure on each side of the spike-head, when it is finished, an ear, *u'*, of proper form to be engaged by a claw-bar; and while I prefer the disposition of the metal which is thus secured by making the bead *u* in the same plane with the body *r*, I do not limit myself specifically to such form of bead, as the necessary amount of metal to form the ears *u'* may be distributed along the edge of the bar R on the rib *s*, and back of said rib, as represented in Fig. 4, where the dotted line may, for purposes of illustration, indicate the outside plane of the finished head, and the metal to the left thereof may represent the excess of metal from which, by a swaging action, to form the ears *u'* on the sides of the spike-head.

Returning now to the rolls in which I have represented the proper grooves for producing the bar R with the bead *u*, the bar, after leaving

the grooves is passed through a pair of grooves, *d*, or through one or more sets of grooves suitable for the further working of the bar, whereby to make it ready for a finishing pass through the final groove *e*, and from which grooves last named it is delivered in the form substantially as represented at R. The bar thus produced is then ready for cutting, compressing, and swaging, in the manner described in the application above referred to.

The number of passes which the bar should receive from *a* to *e* may be increased, if desired, so that a less amount of work shall be done at each pass; but the proportioning of such grooves with reference to the final product will in any case be made in accordance with rules well understood in the art of rolling metals.

Thus far I have described the work as ordinarily it will be done in the working of the ordinary American T-rails or the crop or fag ends thereof; but substantially the same system of grooves may be employed in the working of the well-known double-headed foreign rails, except that as the web parts of such rails are usually thicker than the webs of the standard American T-rail, the use of the grooves *b b'* for the purpose of further thickening the webs will not in all cases be essential; but as the foreign double-headed rail is somewhat higher than the American T-rail, the grooves *a*, as well as perhaps one or more of the subsequent grooves should be correspondingly widened when such double-headed rails or the fag ends thereof are to be worked; but as all the rails referred to have a height less than the length of the usual American spike, provision must be made in any case for the spreading of the rail, and this in either case will be done in accordance with well understood rules, as above stated, and without substantially modifying the construction or action of a system or series of grooves such as are represented at *a*, *c*, *d*, and *e* with reference to the work they are designed to do and the

product they secure; but I do not limit myself to the necessary use of rails or their crop or fag ends, since a properly-shaped billet prepared for the purpose may receive its first pass through the grooves *a*, and be operated upon by subsequent passes in the manner substantially as described with reference to the end here in view; or the billet may be of rectangular shape in cross-section, and be brought to the form desired as a preliminary step in its working by being passed through the grooves *a*, and in such case the use of the grooves *b b'* will not ordinarily be necessary.

A system of grooves, substantially such as represented at *a c d e*, and adapted to produce the bar R, may be incorporated in one train of a three-high mill, as represented in Fig. 1, or may be distributed among two or more trains of either a two or three high mill, provided only that the construction and arrangement be such that the described operation may be carried on and the described product be secured with ease and facility and without necessary reheating.

While I have herein shown and described the blank produced by the rolls, I make no claim thereto, as it will form the subject-matter of another application to be filed in due time.

I claim herein as my invention—

A roll train or mill having in combination a series or system of grooves, substantially such as are represented at *a*, *c*, *d*, and *e*, in any desired number, for the progressive reduction of a railroad-rail or the fag or crop end thereof or a similarly-shaped billet to a blank of the form substantially as represented at R, for the purposes set forth.

In testimony whereof I have hereunto set my hand.

HOWARD GREER.

Witnesses:

R. H. WHITTLESEY,
GEORGE H. CHRISTY.