

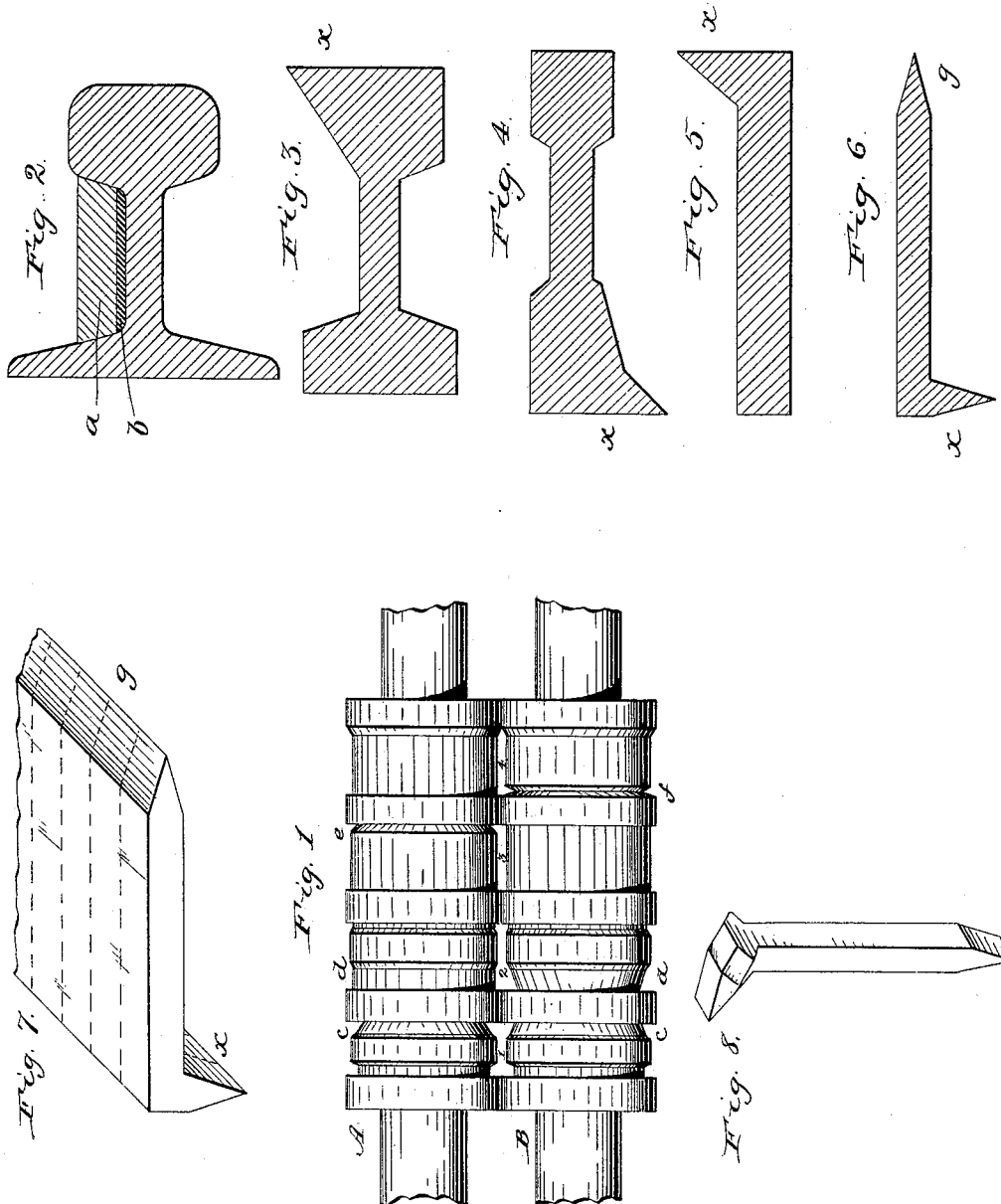
(No Model.)

J. T. JONES.

MANUFACTURE OF RAILWAY SPIKES.

No. 386,406.

Patented July 17, 1888.



Witnesses:  
*Ewell A. Beck*  
*J. Walter Blandford*

Inventor:  
*John T. Jones*  
*by Marcus B. Bates*  
att'y

# UNITED STATES PATENT OFFICE.

JOHN T. JONES, OF IRON MOUNTAIN, MICHIGAN, ASSIGNOR OF ONE-HALF  
TO PETER L. KIMBERLY, OF SHARON, PENNSYLVANIA.

## MANUFACTURE OF RAILWAY-SPIKES.

SPECIFICATION forming part of Letters Patent No. 386,406, dated July 17, 1888.

Application filed November 30, 1883. Serial No. 113,180. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. JONES, of Iron Mountain, in the county of Menominee and State of Michigan, have invented a certain new and useful Improvement in the Manufacture of Railway-Spikes, of which the following is a specification.

It is the object of my invention to produce what may be termed a "cut railway-spike." The customary way of making railway-spikes is to reduce a billet of metal to the shape of a bar nine-sixteenths of an inch square in cross-section, and then to divide this bar into spike lengths, which are subsequently headed and pointed, thus producing what are known as "wrought-spikes." This method takes considerable time and labor and is expensive.

It is my object to reduce the number of steps required for the production of the spike, to simplify the operation, and to lessen the labor required for this purpose.

In carrying out my invention I make use of a homogeneous metal, and preferably employ old steel rails, or the fag-ends of steel rails, on the score of both economy and efficiency. I break down and reduce the rail or billet by successive passes between rolls until it assumes the form of a plate whose cross-section in shape and size has the outline of a pointed and headed spike of standard dimensions. This plate by cross-cuts I divide up into spikes, which require only the side flanges or ears which are usually formed on the heads of spikes to permit them after being driven to be taken hold of and drawn whenever occasion demands it, and these side flanges I form on the heads in a heading-machine, thus completing the spikes.

The nature of my invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is an elevation of the reducing-rolls used by me to break down a steel rail. I omit from this figure a representation of the supporting-frame and driving-gearing. These are instrumentalities that are well known to those skilled in the art, and are such as are commonly used in rolling-mills. Fig. 2 is an enlarged cross-section of the rail as it is before being operated on. Figs. 3, 4, 5, and 6 rep-

resent enlarged cross-sections of the rail as it appears after the first, second, third, and fourth or finishing passes, respectively. Fig. 7 is a view of the spike-blank plate, with dotted lines to indicate the lines of cut. Fig. 8 is a view of the finished spike.

While I may in the practice of my invention use billets of metal of any form and dimensions as material from which to make the spikes, yet, as above intimated, I much prefer to employ old steel rails, both because they are made of a homogeneous metal entirely suited to my purpose and because they are cheap and easily obtained in the market in large quantity. It is in this connection that I have illustrated my invention in the drawings, the rolls having grooves adapted to bring the rail to the shape of the blank shown in cross-section in Fig. 6.

Inasmuch as the head and flange of the rail contain more metal each than the web, and must consequently be drawn out or reduced more than the latter, the tendency during the rolling operation is to form in the blank a longitudinal hollow or depression which will not be entirely filled up by the surplus metal of the head and flange. This groove or depression in the blank will not detract from the efficiency of the spike cut therefrom; but in order to remove it and to make the blank with parallel sides or faces throughout I can, as illustrated in Fig. 2, place on the web portion of the rails an ancillary steel filling-strip, *a*, of the requisite cross-section, between which and the web is a welding-strip of iron, *b*, (such as scrap hoop-iron,) to insure the thorough incorporation in one of the steel web and steel filling-strip. The iron with flux is first put on the web, the steel filling-piece is laid on, and then the whole is brought to welding heat. The rail thus prepared is brought to the proper heat, after which the operation is proceeded with, as follows, the rolls *A B* being in motion and driven by the usual instrumentalities. These rolls are formed in this instance with four sets—1, 2, 3, and 4—of grooves, through which the rail is successively passed. The first pass, through grooves 1, brings the rail to the shape shown in Fig. 3. That part of the rail acted on by the portion *c* of the set of grooves

1 is to form the projecting portion of the spike-head, and after the first pass has the form indicated at *x*, Fig. 3. The blank in Fig. 3 is then passed through the second set of grooves, 5 2, being first turned so as to bring the part *x* into the portion *d* of grooves 2. After the second pass the blank assumes the form shown in Fig. 4, with the part *x* in the condition there represented. This blank is next passed 10 through the set of grooves 3, first being turned so as to bring its part *x* in the portion *e* of grooves 3. After this pass it has the shape in cross section shown in Fig. 4, being in effect a plate with flat parallel sides having a laterally-projecting beveled ridge, *x*, at one edge representing the projecting portion of a spike-head. 15 The next and final pass is through the set of grooves 4, the plate being turned so as to bring the part *x* into the portion *f* of this set of grooves. By this finishing-pass the blank is reduced to a plate having the form in cross-section shown in Fig. 6. In sectional area and shape it represents in outline a railway-spike of standard size, formed at one edge with a laterally-projecting beveled ridge, *x*, corresponding to 25 the head of the spike, and having its opposite edges beveled off, as seen at *y*, to correspond with the chisel-pointed end of the spike. The plate thus formed is by a series of parallel transverse cuts, as indicated by dotted lines 30 in Fig. 7, divided up into spikes. It should of course be brought to the proper heat at the time it is cut in order to permit the cutting mechanism to operate efficiently; and to this 35 end I prefer to apply heat to it as it is fed along to the cutting mechanism, employing for this purpose heating appliances, which I have made the subject of another application of even date herewith, and which act to gradually bring to the proper degree of heat the 40 successive portions of the plate as it is fed along to the cutters. The spikes thus produced are finished in all respects, save that they have not the side ears or flanges with

which spikes are usually provided, with a 45 view to permit their heads to be more readily taken hold of by the tool which is used to draw them out from the wood into which they may have been driven. To provide them with these ears or flanges, each spike as it is severed from the blank can be caught by suitable grippers, and held while "headed up" by a 50 suitable die, so as to form the ears or flanges, thus producing a spike such as illustrated in Fig. 8. The gripping and heading devices are of known construction and require no explanation here. In the spike thus produced the point is entirely formed and the head virtually completed by the time the spike is severed from the blank. That portion of the 60 metal which constitutes the head is not materially upset or otherwise injuriously disturbed, and the head is very much less liable to break off than is the case in the ordinary wrought railway-spike. 65

Having described my invention and the best way known to me of carrying the same into practical effect, what I claim, and desire to secure by Letters Patent, is—

The improvement in the art of making railway-spikes, consisting in incorporating or uniting with the web of a steel rail a steel filling-strip of the requisite cross-section, then bringing this prepared rail, by successive passes between rolls, to the form of a plate or 70 blank having a cross-section corresponding in shape and dimensions to the outline of the spike, and finally cutting up said blank into spikes and forming side ears or flanges upon the heads of said spikes, substantially as hereinbefore set forth. 75 80

In testimony whereof I have hereunto set my hand this 28th day of November, 1883.

JOHN T. JONES.

Witnesses:

EWELL A. DICK,  
J. WALTER BLANDFORD.