No. 634,522. Patented Oct. 10, 1899.

D. A. DALY.

SPIKE.

(Application filed Nov. 15, 1897.)

(No Model.)

Fig. 2.

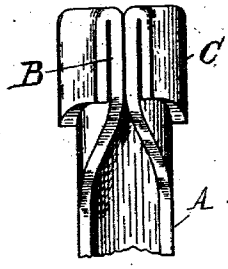


Fig. 1.

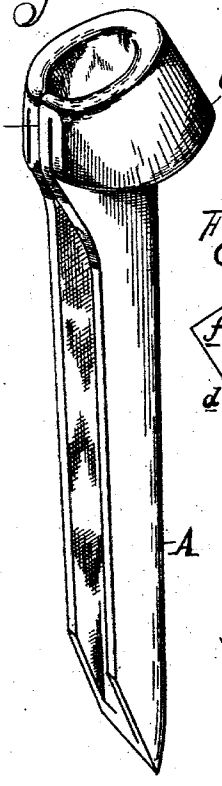


Fig. 3.

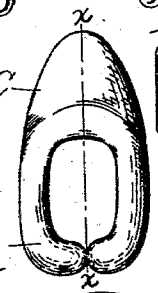


Fig. 4.

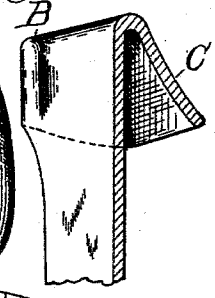


Fig. 5.

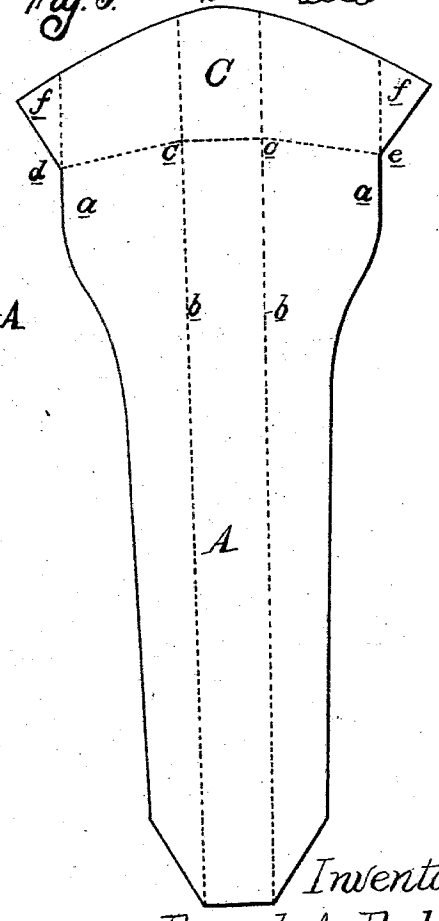
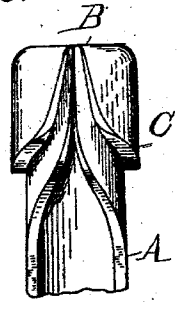


Fig. 6.



Witnesses:
Otto F. Barthel,
F. W. Dougherty.

Inventor:
Daniel A. Daly,
By Thos. S. Sprague & Son
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DANIEL A. DALY, OF DETROIT, MICHIGAN.

SPIKE.

SPECIFICATION forming part of Letters Patent No. 634,522, dated October 10, 1899.

Application filed November 15, 1897. Serial No. 658,568. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. DALY, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Spikes, of which the following is a specification, reference being had therein to the accompanying drawings.

This improvement relates to spikes which are known as "railway-spikes;" and it consists in the peculiar form and construction of a spike with a hollow stem.

The invention further consists in the construction of such a spike from a prepared blank cut out of sheet metal shaped by dies and, further, in the construction, arrangement, and combination of the various parts hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of my improved spike. Fig. 2 is a rear elevation of the upper portion. Fig. 3 is a plan of the head. Fig. 4 is a vertical central section thereof on line *x x*, Fig. 3. Fig. 5 represents the blank from which the spike is constructed. Fig. 6 is a rear elevation of the upper end of the spike in a modified form of construction.

The spike as shown in Fig. 1 consists of a shank A and a head B, which head is formed by means of a peculiarly-formed turned-down collar C, which surrounds the upper end of the shank and forms the driving, drawing, and bearing head of the spike. This spike is formed from a single piece of sheet metal or blank by shaping between dies. The blank for the purpose is shaped as shown in Fig. 5, wherein A denotes the body portion from which the shank is formed, and C the portion from which the collar or head is formed. The shank portion A of the blank is pointed at its lower end and has parallel or slightly-tapering edges and increases toward the upper end in width by means of the lateral prolongations *a* of the blank. The collar portion C forms an upward and lateral prolongation of this shank portion. It is generally formed with the outlines required to form an ungulate body, which is substantially the form of the collar C of the finished spike. From this blank the spike is formed by folding the same along the longitudinal lines *b* (shown in dotted lines) and cross-folding it along the line *d e*, as shown in Fig. 5. The line *d e* is not a straight line, but curves upward, preferably by means of short sections of straight lines *d c*, *c c*, and *c e*. The result of bending the blank along these lines is that in the completed spike the collar C slopes away and overhangs the shank of the spike, on the rail-face thereof, thereby forming with the lower edge of said collar the rail-bearing of the spike. In this manner of folding the spike is hollow its entire length, closed on its bearing-face, and open on the opposite face, except at the portion forming the head, which is formed closed by further bending in the lateral prolongations *a* from opposite sides until they come in contact with each other along their edges. That portion of the collar C which turns over the sides of the spike is pressed closely in contact therewith, so that the lower edges thereof form suitable shoulders for drawing the spike, which shoulders are continuous with the rail-bearing formed by the remaining portion of the collar.

In the drawings I have shown the spike as being folded in a manner to form a U-shaped shank in cross-section; but it is obvious that it may be given a V shape or other like gutter-shaped form.

In the modification in Fig. 6 the collar C does not close around the rear portion of the head, and this form is obtained by omitting the triangular portions *f* of the collar portion of the blank, which portions may be omitted, if desired, to cut up the material from which the blank is made to better advantage.

My improved spike has several advantages. It will be seen that it is made with a minimum of material, and in weight I save, perhaps, thirty-two per cent. compared with the ordinary spike of equal size. It has a strong driving-head, owing to the doubling of the material at the upper end of the spike. It forms a strong rail-bearing, as the bearing is continuous along the lower edge of the collar. It drives readily into the wood, as it may be made more smooth than other forms of spike and being provided with a chisel-point enters the wood readily. It does not break the wood down when driven in and when removed does not leave a big hole, but allows the wood to fill in the space again. It has superior holding qualities, as it is hollow

and forms a maximum of surface with a minimum of material and clamps the fibers of the wood between the open sides. It can be readily withdrawn with the ordinary claw tools in use, and the head cannot collapse with any rough treatment, as it is closed all around.

The prolongation *a* being tapered off gradually into the shank portion below gives additional strength to the upper end of the spike, and the article may be readily manufactured by shaping the material cold between dies without any injury to the material from stretching or compressing by shaping simultaneously longitudinally and crosswise.

While I have shown a specific form of head on my spike, I do not wish to be limited to this precise form, as many modifications can be and have been devised by me which come within the spirit of my invention, which, I believe, includes any metal spike having a trough-shaped shank and a head formed by reinforcing the top thereof and with a rail-bearing formed by a projecting section of the blank at the top.

I am aware that heretofore spikes have been made with a shallow groove or grooves in the stem, these grooves being in some cases V-shaped and in other cases a shallow rectangular groove; but my invention, as I understand it, is not for a grooved spike, but for a hollow or open-sided U-shaped spike, the sides of the spike being of sufficient width to form, in effect, jaws which grasp the sides of the plug of wood within. In the grooved spikes referred to the holding effect is simply due to the increased friction of the ribs which form the sides of the groove and do not produce any such effective clamping or compressing action upon the inclosed plug of wood as is achieved by my construction.

While I have shown and described a hollow spike made from sheet metal, in its broader features I believe my invention includes spikes containing the characteristics specified in the claims whether made from sheet metal bent into the shape described or whether forged or otherwise formed.

What I claim as my invention is—

1. A sheet-metal railway-spike having a hollow shank provided at its head with a turn-down collar, pressed into contact therewith at the sides of the shank and projecting beyond the rail-face thereof to form a rail-bearing.

2. A sheet-metal railway-spike having a hollow shank extending the whole length of the spike and provided at its head with a sheet-metal portion folded upon the sides of the shank and extending beyond the rail-face thereof.

3. A sheet-metal railway-spike having a hollow shank provided at its head with a collar, formed with an overhang by cross-folding the metal blank from which the spike is formed along an arching line.

4. The herein-described blank for forming a sheet-metal spike by folding between dies, the same consisting of the shank portion A having the lateral prolongation *a* and the upper prolongation or collar portion C.

5. A railway-spike formed of sheet metal with an open-sided shank, and a head formed of an integral portion extending down beside the upper portion of the shank reinforcing the top of the shank, and having a portion extending laterally beyond the shank to form a rail-bearing.

6. A hollow railway-spike comprising a trough-shaped shank having substantially parallel sides, an exterior reinforcement at the top forming a head, the lower edge of the reinforcement extending from the sides of the shank to form a drawing-shoulder and a lateral projection at the end forming a rail-bearing.

7. A sheet-metal railway-spike comprising a trough-shaped shank, a head formed by a reinforcement extending down beside the upper portion of the shank and projections for preventing the closing of the head portion of the spike.

8. A hollow spike with a head and a stem, the stem being straight, of U shape, the sides of the stem being substantially parallel and of sufficient width as to form efficient clamping-jaws for the plug of wood between, whereby the holding efficiency of the spike is increased.

9. In a hollow spike, the combination of a head, a straight stem formed of deep U shape in cross-section, the two sides being substantially parallel, extending throughout the driving portion, and a point formed by tapering the sides back from the edges to the back.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL A. DALY.

Witnesses:

JAMES WHITTEMORE,

M. B. O'DOGHERTY.