

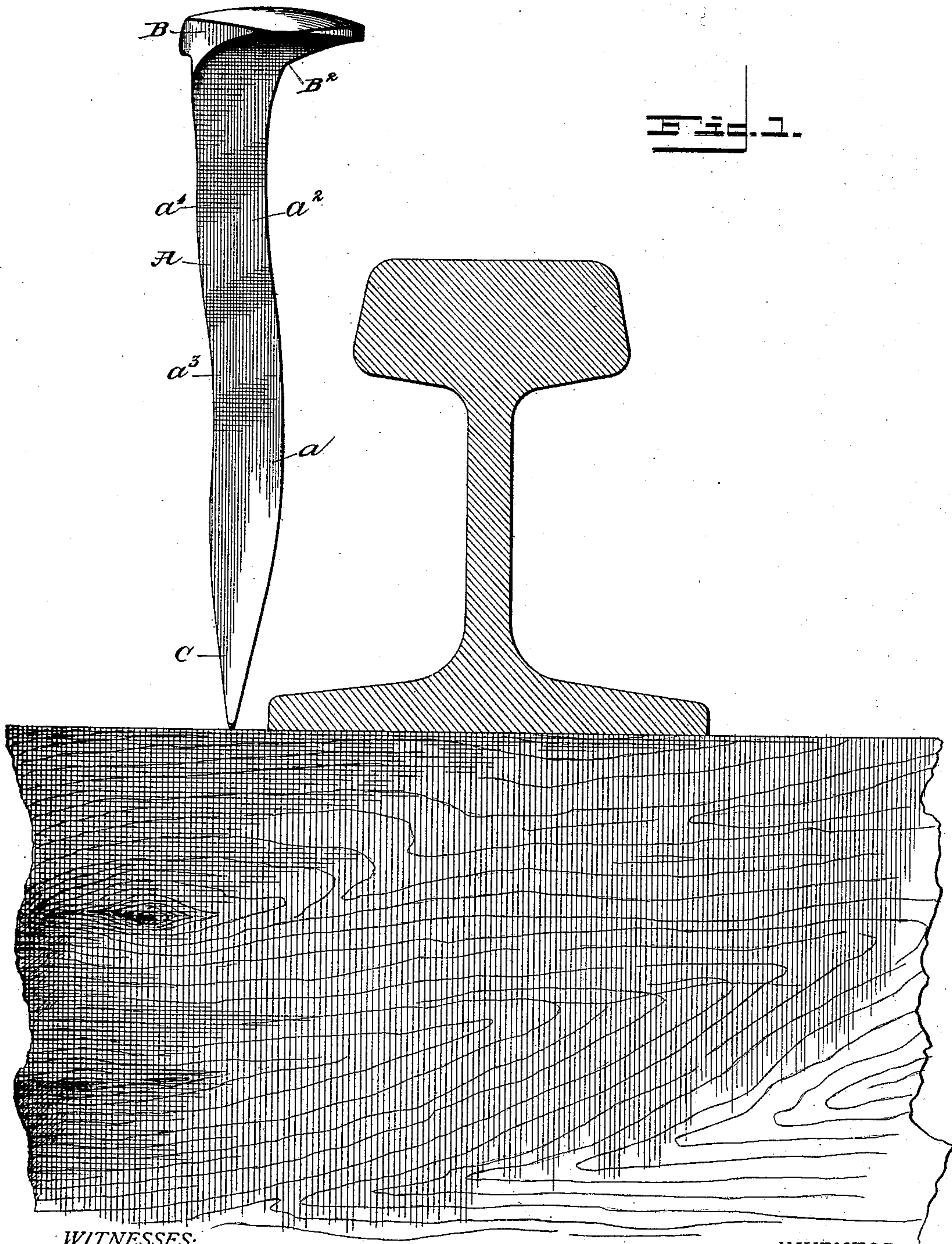
(No Model.)

2 Sheets—Sheet 1.

S. C. HILL.  
RAILWAY SPIKE.

No. 491,050.

Patented Jan. 31, 1893.



WITNESSES:

*N. N. Humphrey*

*J. T. [Signature]*

INVENTOR,

S. C. HILL.

BY

*A. S. [Signature]*

HIS ATTORNEY.



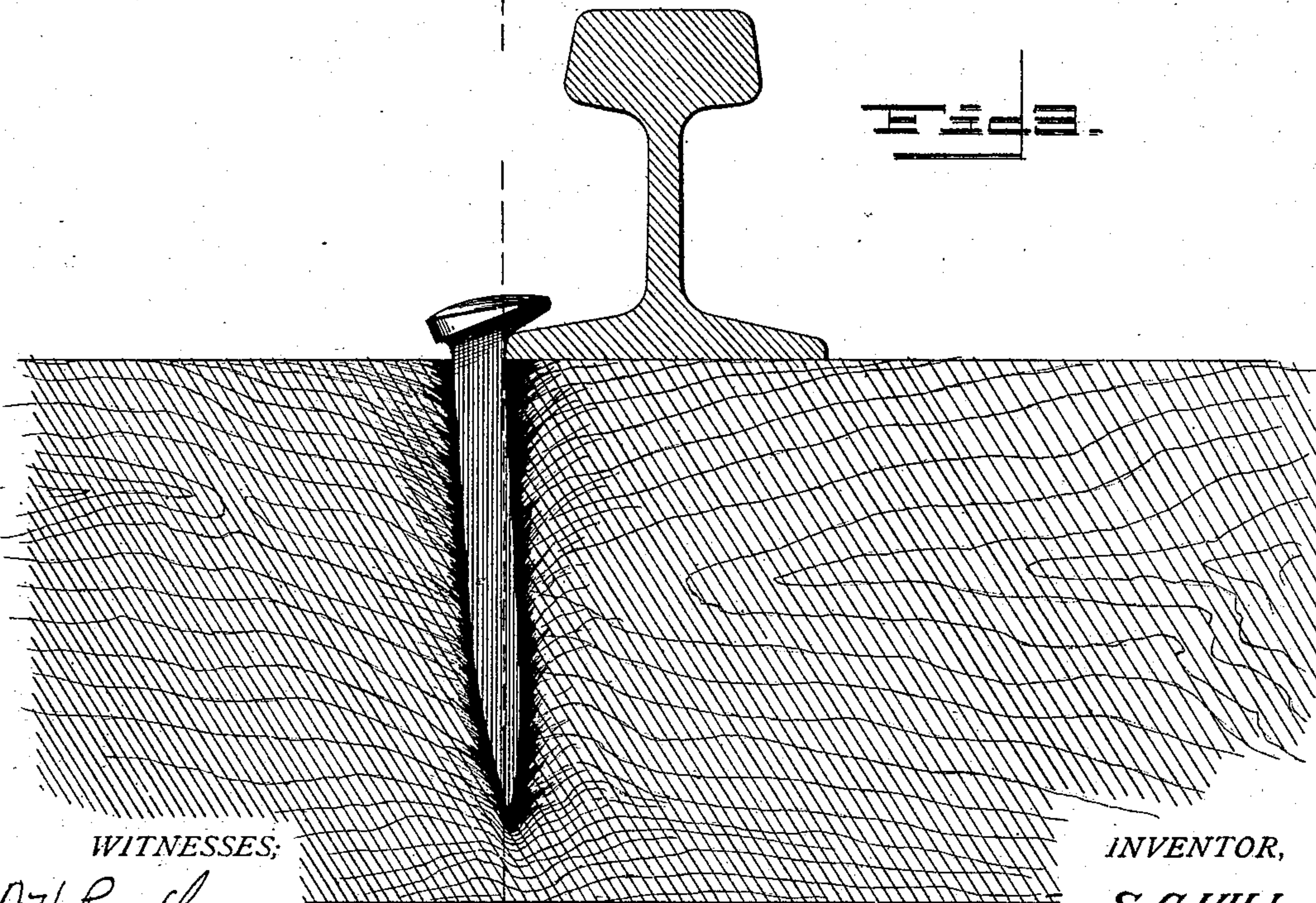
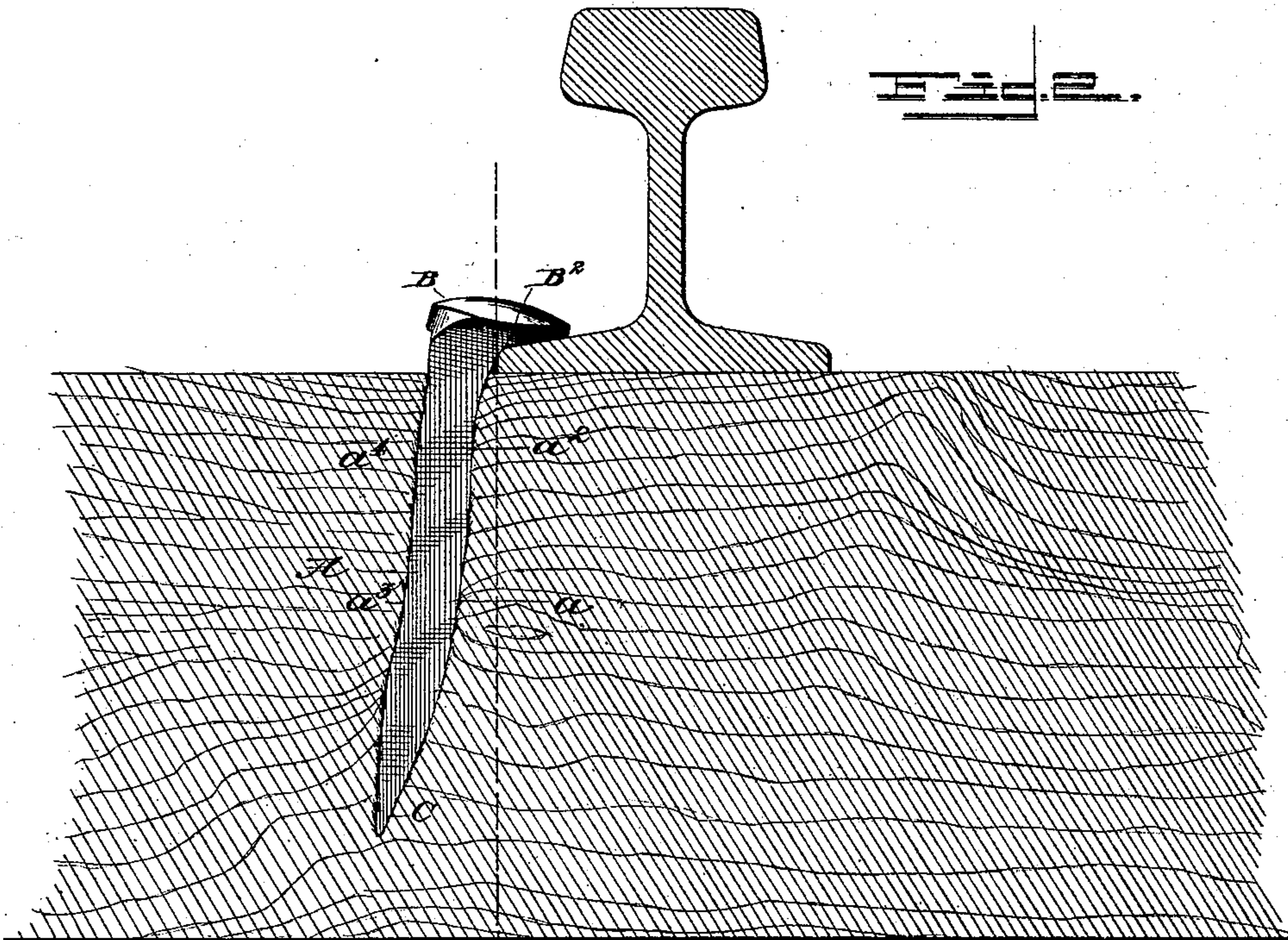
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# UNITED STATES PATENT OFFICE.

SAMUEL C. HILL, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO  
JOSEPH B. HILL, OF SAME PLACE.

## RAILWAY-SPIKE.

SPECIFICATION forming part of Letters Patent No. 491,050, dated January 31, 1893.

Application filed November 20, 1890. Renewed June 9, 1891. Again renewed December 17, 1891. Serial No. 415,415. (No model.)  
Patented in England September 22, 1890, No. 14,954, and in France September 22, 1890, No. 208,364.

*To all whom it may concern:*

Be it known that I, SAMUEL C. HILL, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Railway-Spikes, (for which I have obtained Letters Patent in Great Britain, dated September 22, 1890, No. 14,954, and in France, dated September 22, 1890, No. 208,364;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to railroad spikes, and particularly to that class having curved shanks, especially where the shank is constructed with a single slight convexity near its top on the outside, or side which, in use, will be farthest from the rail, and with a corresponding depression or concavity on the other side, that is, on the side which, in use, will be next to the rail, which shank has its end or point formed with a convex curve at the side, which, in use, will be next to the rail, and with a straight edge or slight depression on the opposite side; the object of the present invention being to be able to drive a spike having the described upper curves, downward without tilting the head over toward the rail or causing it to dip too soon and too much, to drive the spike easily and with great certainty without mashing the wood or rendering it more porous or spongy and liable to take in water to rot it, the spike to drive in an outward direction under blows vertically directed, affording increased resistance to lateral displacement, and at the same time not liable to break at the neck or throat, where spikes are generally weak.

In the accompanying drawings: Figure 1—is a view, in elevation, of the improved spike, showing the same ready to be driven; Fig. 2—is a view showing the improved spike, in elevation, driven into position, the rail and tie appearing in cross-section; Fig. 3—is a view, showing the straight spike in position.

In practice, where railroad spikes have been made straight they have been difficult to drive with certainty into position, after they have been driven, it having been generally neces-

sary to give a lateral blow, from outward, to the head, to cause it to take over the flange, of the rail, more firmly. Besides, such spikes are readily loosened by the vibratory motion of the rails, incident to the passing of cars, this loosening making the spike directly less efficient in holding the rail in place, and indirectly less efficient by allowing water to get into the well made by the spike, and thus rot the wood. Where spikes have been made curved, they have been of a configuration which rendered them difficult to drive, and, in driving, difficult to prevent from being bent or curved out of shape. The present spike has a wedge-end or chisel-point, formed by a plane upward and outward inclined surface on the side, which, in use, will be in the inside, and a like surface on the opposite side has a convex curve on the inside or side, which, in use, will be nearest to the rail from the top of the wedge upward to near its upper part, below the head, and from there, continuous with it, a concave curve to the under part of the head. On the opposite side, or side which, in use, will be farthest from the rail, the shank, has, from the top of the wedge upward, a slight bulge or convex curve, followed by a concave curve upward to near its upper part, and from there, continuous with it, a convex curve to the head, corresponding with the concave curve on the opposite side. The spike has a rounded projecting head; and an enlargement at the throat; the enlargement being in continuous curve with the inside concave curve on the under portion of the head. The head employed with the improved shank, herein described, is the head of the usual standard straight spike; and in this respect the improved spike also differs from any curved spike that has preceded it. The slight bulge may be omitted and the concave curve begin at the wedge.

It is advantageous to provide the upper portion of the shank, near the head, that is, at the upper portion of the convex curve, with a flattened surface or slight depression and a slight bulge above which will insure the spike hugging the rail at the throat.

In the drawings, A indicates the improved spike, having a head B, throat B<sup>2</sup>, and chisel



edge C,  $a$  indicating the convex curve on the side, which, in use, will be the inside,  $a^2$  the concave curve on the inside,  $a^3$  the concave curve on the side of the shank, which, in use, will be the farthest from the rail, and  $a^4$  the convex curve thereon. The spike will be made in a die, and with the same number of blows as the ordinary spike, the only difference being, the mold will conform to the desired configuration of the new spike. The chisel edge may be given afterward, by suitable pressure, as by rolling or otherwise. By having the chisel edge, not only is the spike better driven, but by not having the inside of the point rounded, the spike is not tilted out from the start causing it to dip. The spike thus constructed can be made as easily and as cheaply as the ordinary straight spike; can be driven more easily and with greater certainty than the straight spike or than any other curved spike, and without mashing the wood of the tie which makes it porous and spongy and liable to take in water at the spike to rot it; can be driven without the usual danger of contorsion or breaking, can be driven in an outward direction under blows vertically directed, thus affording an increased resistance to lateral displacement; and which, at the same time, will always hug the flange, and will remain more firmly embedded, and will hold a rail or other object with greater tenacity, standing lateral strain, giving greater resistance to lateral pressure and vertical vibratory motion, and presenting an elasticity, by its configuration, which will obviate the usual danger of breaking from the strain to which spikes are generally subjected.

To drive the spike, start the point about three-eighths of an inch from the flange of the rail in an upright or straight position so that the first bulge in the spike will graze the flange. After that, it will assume proper position automatically when driven, hugging the flange during the remainder of its length. The last blow given it will drive the throat and head most firmly to the flange. Highly satisfactory tests have been made by driving a spike six or eight times into new white oak ties, and the result was that the driving did not injure the spike nor change its shape in the least.

While I deem it preferable to employ, with my improved shank, the head of an ordinary standard straight spike, I wish it to be understood, that the use of my improved shank with any suitable head, would be an infringement of my invention and that any spike or nail for the ordinary purposes for which spikes or nails are employed, where a secure fastening is ordinarily obtained by oblique driving or clinching may be made with the described shank, which will cause the nail or spike to hold with great tenacity, and with the other advantages named above.

I claim—

1. A spike having a shank provided with a chisel edge or wedge point at its lower end, the shank having a convex curve on the inside, or side, which, in use, will be nearest to the rail, from the base of the wedge upward to near its upper part, below the head, and from there, continuous with it, a concave curve to the under part of the head, on the opposite side or side which, in use, will be farthest from the rail, a concave curve from the top of the wedge upward to near its upper part below the head, and from there, continuous with it, a convex curve to the head, substantially as and for the purpose described.

2. A spike having a shank provided with a chisel edge or wedge point at its lower end, the shank having a convex curve on the inside or the side which, in use, will be nearest to the rail, from the base of the wedge upward to near its upper part, below the head, and from there, continuous with it, a concave curve to the under part of the head, on the opposite side or side which, in use, will be farthest from the rail, a slight bulge or convex curve followed by a concave curve from the top of the wedge upward to near its upper part, below the head, and from there, continuous with it, a convex curve to the head, and an enlarged throat, substantially as and for the purpose set forth.

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

SAMUEL C. HILL.

Witnesses:

DAVID H. MEAD,  
F. B. KEEFER.