(No Model.)

# I. C. HOWES.

## RAILWAY SPIKE.

No. 490,439. Patented Jan. 24, 1893.

Fig. 1.

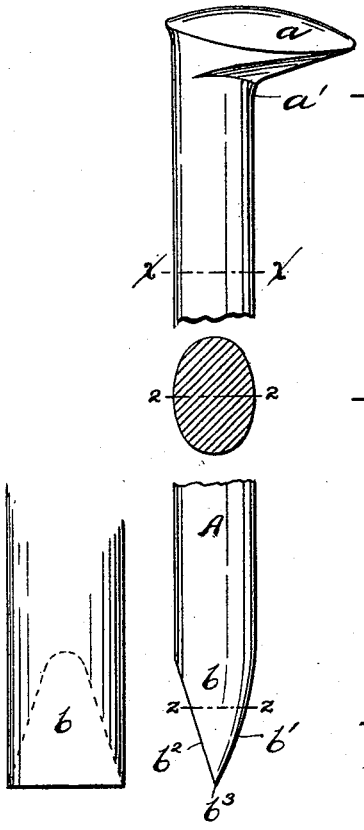



Fig. 5.

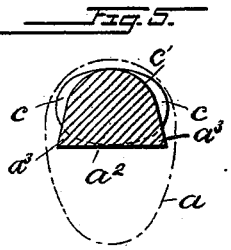



Fig. 3.

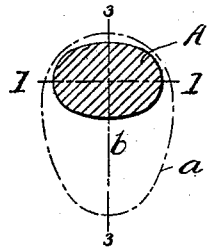



Fig. 4.

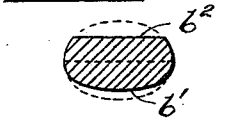
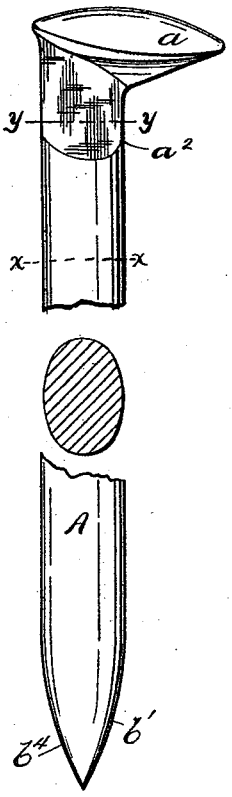



Fig. 2.




Witnesses

E. A. Kelly Jr.

David Levan

Isaiah C. Howes Inventor

By his Attorney W. H. Church

# UNITED STATES PATENT OFFICE.

ISAIAH C. HOWES, OF KANSAS CITY, MISSOURI.

## RAILWAY-SPIKE.

SPECIFICATION forming part of Letters Patent No. 490,439, dated January 24, 1893.

Application filed March 12, 1892. Serial No. 424,625. (No model.)

*To all whom it may concern:*

Be it known that I, ISAIAH C. HOWES, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain Improvements in Railway-Spikes, of which the following is a specification.

This invention relates particularly to spikes adapted to secure rails to the wooden cross-ties of a railway. Spikes for this purpose are commonly provided with a one-sided head adapted to overlap the rail flanges; and the body, though usually rectangular, has been made of different cross-sections including both round and elliptical. The generally recognized advantage of the round section spike, as compared with one of rectangular section is, that it avoids cutting and splitting the wood into which it is driven. This advantage also exists with the elliptical section with the further advantages, first that the latter cannot turn in driving as will the round section spike, and second that it has greater capacity to resist outward strains brought intermittently upon the rail by the passage of trains. Both the round and elliptical sections however are ill-adapted to withstand the contact of the edge of the rail flange, and to overcome this disadvantage a substantially round spike has been devised with a flat front surface immediately under the projecting head of the spike for bearing against the rail, flat faces being also provided to prevent turning of the spike in the wood. In this construction the area of cross-section under the head is increased thus causing a waste of material and additional expense in manufacture.

The main object of my invention is to provide a spike which with a minimum of material will have a maximum capacity for resisting the strains on the spike already referred to both in the timber and against the rail flange; and which can at the same time be manufactured cheaply.

To this end therefore my invention consists mainly in providing a spike having an elliptical cross-section throughout that portion of it which is driven into the wood, the major axis being arranged at right angles to the overhanging head,—and with a different cross-section under the head having the same area as the elliptical cross-section but better adapted to receive the pressure and wear caused by its contact with the rail-flange; said section being formed by merely changing the position of a portion of the metal without any increase by upsetting or otherwise.

The invention further consists in maintaining an elliptical section even at the sharpened end of the spike.

Figure 1 is an elevation with cross-section of a spike of elliptical section throughout its whole length. Fig. 2 is a similar elevation showing my changed body section under the head. Fig. 3 is a sectional view on the line X X Fig. 1, indicating the overhanging head in dotted lines. Fig. 4 is a sectional view on the line Z Z of Fig. 1, indicating the body section in dotted lines. Fig. 5 is a sectional view on line Y Y Fig. 2.

The body A Fig. 1 is of elliptical section from the overhanging head $a$ to the beginning of the point $b$, the major axis 1—1 of the cross-section extending crosswise or at right angles to a center 3—3 passing through the head $a$ as indicated in Fig. 3. The point $b$ tapers to an edge $b^3$ but differs radically from the usual shape. In Fig. 5 the rear side $a^2$ is flat as usual, a cross-section taken on any point $z\,z$ being bounded by a straight line, as $b^2$ Fig. 4. The front side $b'$ however does not present a flat surface but is rounded transversely as shown at $b'$ Fig. 4 to elliptical form the minor axis of which is gradually reduced as the point $b^3$ is approached and no corners or sharp edges appearing at any part of the front side of the tapered point, which blends gradually into the normal elliptical section of the main body. The front and rear sides $b'$ and $b^2$ of the taper are preferably arranged so that the spike naturally tends to tip toward the rail base in driving. The rear face may also be curved instead of flat as shown at $b^4$ of Fig. 2, but I prefer to form it as represented in Fig. 1 because I find this the most convenient and cheapest way to make it.

In order to provide a substantial bearing surface for the edge of the rail flange, I form the body under the head as indicated in Figs. 2 and 5. The cross-section at Y Y is of the same area as at X X but the metal $c$ (Fig. 5) which increases the width of the main portion of the body is pushed to the point, thus forming a broad flat surface $a^2$. By this means

the metal *c*, which on that portion of the spike that is not driven into the timber and serves no specific purpose is placed where it increases the wearing surface in contact with the rail; thus attaining a desirable object without the use of any additional metal.

When my improved form of spike is driven into a wooden sill in the ordinary manner the fibers of the wood readily adjust themselves to the curvilinear outline of the body in the same manner as though it were of round section. Two additional advantages result however, from the oblong section; first the spike is prevented from turning in the process of driving as effectually as though it were of rectangular section; and second the surface opposed to the rapidly recurring outward strains is considerably greater than can be secured with an equal amount of metal arranged in rectangular or round section and the transverse strength of the spike still remains ample to compress the wood without bending. It thus not only holds better when first driven into the wood but maintains its hold longer. At the same time that portion of body which remains above the sill is properly shaped to bear against the rail edge without increase of material or reduction of the strength of the spike.

What I claim is:—

A railway spike having the main portion of the body elliptical in cross-section with the major axis thereof at right angles to the overhanging spike head, but having a different cross-section under the head substantially of the form described and of the same area as the elliptical portion of the body and a tapering point of similar cross-section but gradually reduced minor axis, substantially as set forth.

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

ISAIAH C. HOWES.

Witnesses:

ROBEBT C. HOWES,

P. J. GILPIN.