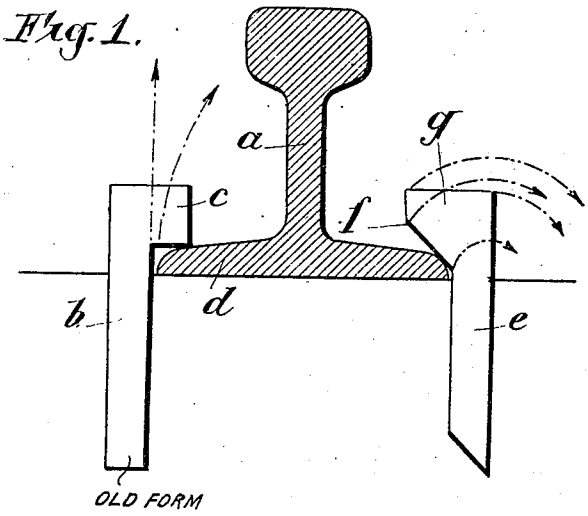
F. RADELET AND E. BONNET.

SPIKE AND SCREW FOR RAILS.

APPLICATION FILED JAN. 26, 1920.

1,430,259. Patented Sept. 26, 1922.

Fig. 1.



OLD FORM

Fig. 2.

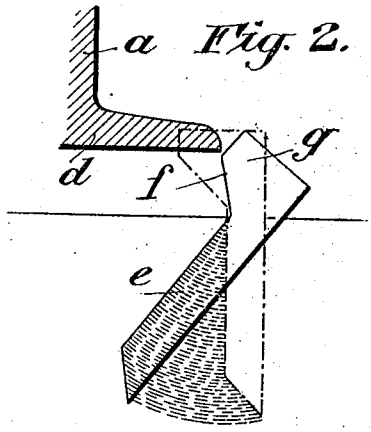


Fig. 3.

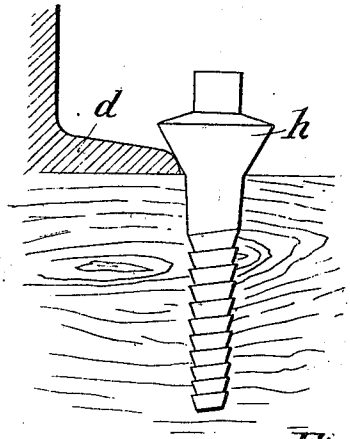


Fig. 4.

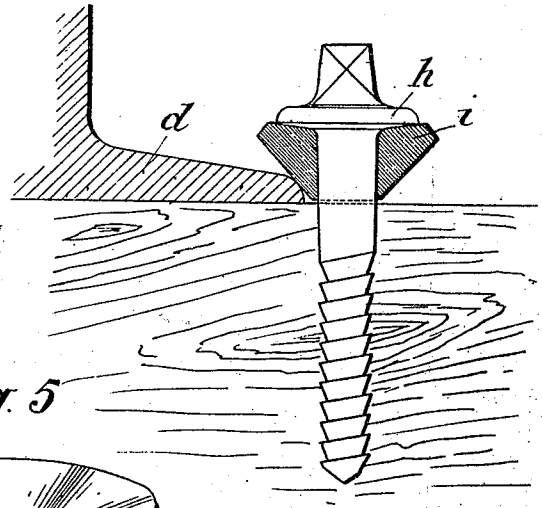
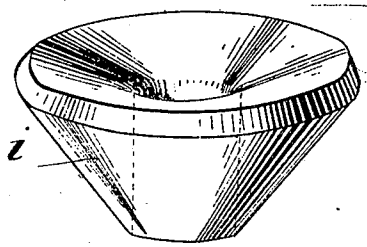


Fig. 5



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UNITED STATES PATENT OFFICE.

FERNAND RADELET AND EDMOND BONNET, OF BRUSSELS, BELGIUM.

SPIKE AND SCREW FOR RAILS.

Application filed January 26, 1920. Serial No. 354,068.

To all whom it may concern:

Be it known that FERNAND RADELET and EDMOND BONNET, subjects of the King of the Belgians, residing at Brussels, Belgium, have invented new and useful Improvements in Spikes and Screws for Rails, of which the following is a specification.

This invention relates to railway spikes (i. e., spikes and screws intended to secure the rails of railways to sleepers) and it is the result of observing that spikes or screws introduced obliquely into the sleepers, with the point directed inwardly, appear to hold in place better than those introduced vertically.

Railway spikes of current design are provided with a head the lower face or rail engaging surface of which is usually at right angles, or approximately so, to their stem. When the spikes are positioned substantially vertically in a sleeper this results in the vibrations of the rail producing a tearing out strain in the direction of the axis of the stem, the continuation of such strain soon pulling the stem out of its seat.

In accordance with our invention this disadvantage is avoided by forming the spikes with an enlarged head having an unbroken rail engaging surface inclined at about 135° or more to the stem.

With such a railway spike, the rail engaging surface is at an angle of about 45° or more to the horizontal, even when the stem is positioned vertically in the sleeper. The vertical strains of the rail foot no longer have the tendency to pull the spike or screw out of its seat, but act laterally on the head of the same and have the tendency to push it outwardly. But in order to move the head of the spike or screw in that direction, the strains exercised by the rail must move the whole of the stem inwardly and the stem can only execute the movement in question by laterally compressing the wood or material of the sleeper into which the stem is driven. The resistance offered to the strains of the rail, is therefore much greater than when the said strains act in the longitudinal direction of the spike or screw, and the fixing of the rail therefore lasts a greater time.

The same result can be obtained by making the spikes, according to the invention, of two parts, one part comprising a spike of ordinary shape and the other a conical washer or member adapted to bear against the foot of the rail.

The upper face of the washer or contact part can be made so as to fit the lower face of the head of the spike.

The invention is illustrated by way of example in the accompanying drawings.

Figure 1 shows in cross-section a rail secured to a sleeper, on the left by an ordinary spike, and on the right by a spike according to the present invention.

Figure 2 is a cross-section of a portion of the foot of a rail, showing diagrammatically the effect of vibrations of the rail on a spike according to the invention.

Figure 3 is a similar view of a portion of the foot of a rail secured to a sleeper by a screw according to the invention.

Figure 4 is a portion of the foot of a rail, in vertical section, secured to a sleeper by an ordinary screw provided with a conical washer.

Figure 5 shows in perspective a conical washer like that shown in Figure 4.

In Fig. 1, the rail *a* is secured on the left hand side, by means of an ordinary spike *b*, the head *c* of which is at right angles to its stem, so that the said head *c* rests with the end of its bottom face on the foot *d* of the rail, beyond the rounded off edge of the latter. The result is that the strains caused by vibrations of the rail, act on the spike in a vertical or practically vertical direction as shown by the arrows.

On the right hand side, the rail *a* is secured by a spike *e* made according to the invention. The bottom *f* of the head *g* of the said spike has an inclination of 135° to the stem, i. e., 45° to the horizontal, owing to which the said inclined part rests on the rounded off portion of the edge of the foot *d* of the rail, and the strains produced by vibrations of the rail, are transmitted to the head *g* of the spike laterally, in the direction indicated by the arrows.

In Figure 2, the spike is shown in dotted lines in the same position as in Figure 1, and in full lines in the position which it must assume in order to enable the rail to become completely disengaged, the cross-hatched portions indicating the movement that the inner side of the stem of the spike must make in order to come into the said position.

In Figure 3, the foot *d* of the rail is secured in place by a spike *h* with a conical head, the lower face of which has an inclination of more than 135° to the stem i. e., more

than 45° to the horizontal. The strains due to vibrations of the rail, will have the same effect on this spike as on the spike *e*.

In Figures 4 and 5, a washer is shown, the lower face of the washer having an inclination of about 45° relatively to the horizontal, owing to which, when it is pressed against the edge of the foot *d* of the rail and the head of the spike *h*, the strains due to vibrations of the rail, act on the stem of the spike through the washer, which in this construction forms the detachable lower portion of the head of the spike.

Having now described our invention, what we claim as new and desire to secure by Letters Patent is:

1. As a new article of manufacture, a railway spike comprising a stem adapted to be driven into a sleeper, and an enlarged head having a straight rail-engaging surface at an angle of at least 135° to said stem.

2. As a new article of manufacture, a railway spike comprising a stem adapted to be driven into a sleeper, and an enlarged head having an inclined rail-engaging surface adapted to transmit the greater part of the vibration of the rail to the stem in a lateral direction when said stem is in a substantially vertical position.

3. As a new article of manufacture, a railway spike comprisng a stem adapted to be driven into a sleeper, and an enlarged head having an upper portion integral with said stem and a lower portion adapted to be clamped between the upper portion and the foot of the rail, and provided with a rail engaging surface at an angle of at least 135° to said stem.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FERNAND RADELET.
EDMOND BONNET.

Witnesses:
LÉON PIÉRARD,
F. BALREA.