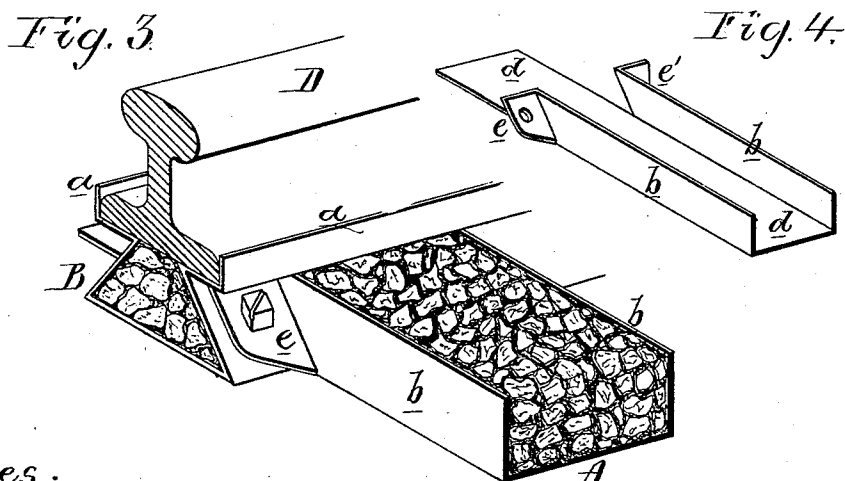
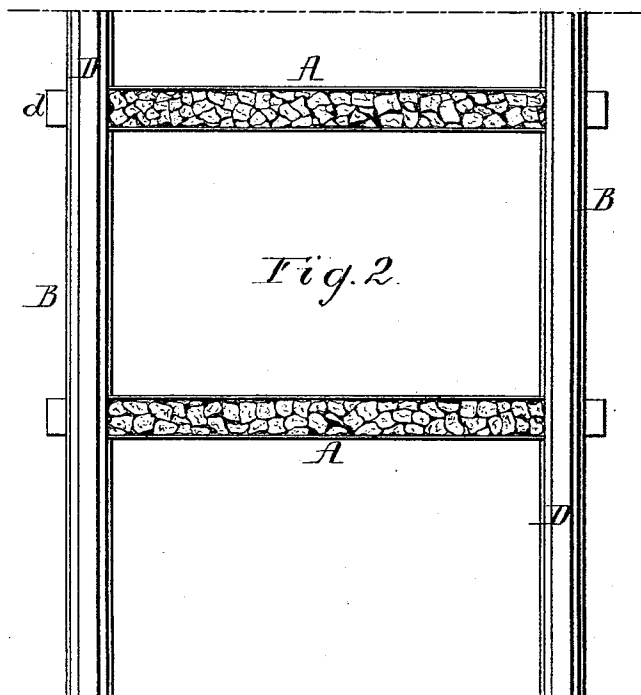


R. E. NICHOLS.
Permanent Way for Railroads.

No. 166,625.

Patented Aug. 10, 1875.



Witnesses,
E. H. Eckfeldt.
Harvey Smith.

Reuben E. Nichols
by his Attorneys
Hornum and Son

UNITED STATES PATENT OFFICE.

REUBEN E. NICHOLS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PERMANENT WAYS FOR RAILROADS.

Specification forming part of Letters Patent No. **166,625**, dated August 10, 1875; application filed July 19, 1875.

To all whom it may concern:

Be it known that I, REUBEN E. NICHOLS, of Philadelphia, Pennsylvania, have invented an Improved Permanent Way for Railroads, of which the following is a specification:

The object of my invention is to make a substantial and lasting permanent way of channel-iron in place of the ordinary wooden sleepers; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a transverse section of the permanent way; Fig. 2, a plan view, and Figs. 3 and 4 perspective views, of parts of the way.

A A are the transverse sleepers or cross-ties, and are made of channel-iron of the character shown in the drawing. B B are the longitudinal sills for receiving the rails, and are also made of channel-iron with opposite sides bent inward, and these sides terminating above in flanges *a*, partly horizontal and partly vertical, for the reception of the rails D. The sleepers are connected to the sills in the manner which will be best understood by referring to the perspective views, Figs. 3 and 4. Where a sill crosses a sleeper the side flanges *b b* of the latter are vertically severed down to the bottom plate *d* of the channel-iron, and for a short distance horizontally on a line with the upper surface of the said bottom plate, thereby forming from each side flange two lips, *e* and *e'*, which are bent outward, as shown in Fig. 4. The channel-iron sills are introduced endwise into the spaces between the lips of

the sleepers, so as to rest on the bottom *d* of the same, and these lips are secured to the sides of the sills by bolts, screws, or otherwise. After the sleepers and sills have been thus secured together both are filled with broken stones or rubble, which add to the stability of the structure, and the rails are then laid along the sills between the upturned edges of the flanges *a a*, to which the flanges of the rails may be bolted or otherwise secured.

A prominent advantage of my invention, aside from its increased stability, lies in its security, the flanges of the sill B effectually preventing the lateral displacement of the pieces of a broken rail.

I claim as my invention—

1. A permanent way, consisting of sleepers and sills of channel-iron, connected together and placed for the reception of a filling of broken stones or rubble, all substantially as set forth.

2. The channel-iron sleeper A, from the sides of which lips *e* are formed for attachment to the sides of the channel-iron sill B, as specified.

3. The channel-iron sill B, with sides bent inward, and flanges *a*, and with upturned edges for the reception of the rail, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

REUBEN E. NICHOLS.

Witnesses:

EDWARD H. ECKFELDT,
HARRY SMITH.