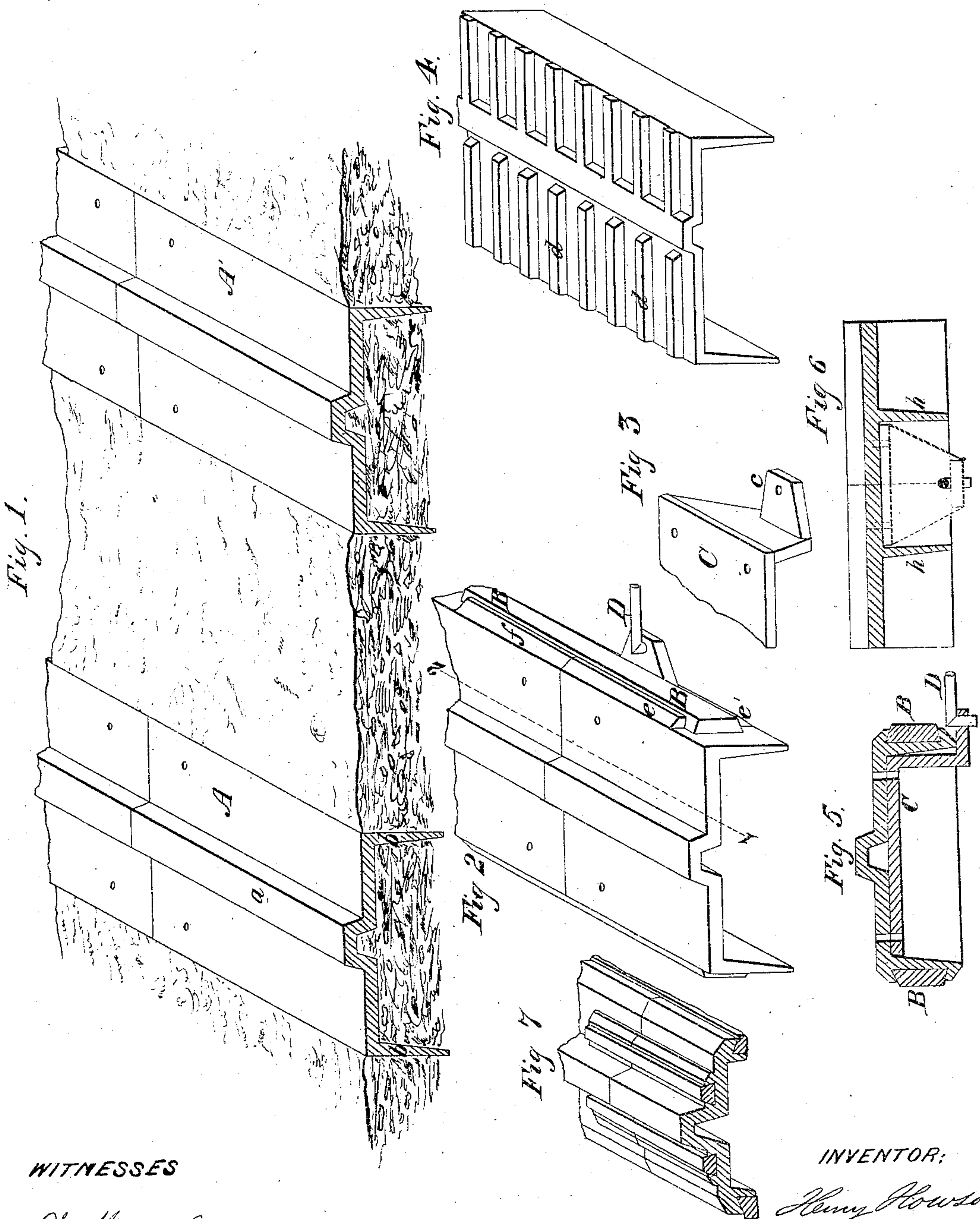


B. C. Smith.

Railroad Track.

Patented Jul. 9, 1861.

*N^o 1,790.
32,794.*



WITNESSES

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UNITED STATES PATENT OFFICE.

BARZILLAI C. SMITH, OF BURLINGTON, NEW JERSEY.

RAILWAY.

Specification of Letters Patent No. 32,794, dated July 9, 1861.

To all whom it may concern:

Be it known that I, BARZILLAI C. SMITH, of Burlington, Burlington county, New Jersey, have invented certain new and useful Improvements in the Construction of Railways; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My improved rail road consists of two or more rows of cast iron girders, each girder consisting of a broad plate with a longitudinal rib above forming the rail for receiving the car wheels, and longitudinal strengthening ribs below, the said strengthening flanges being bedded into, and the plate or body of the girder on the ground, as described hereafter, so as to prevent all tilting or lateral or vertical displacement, the whole forming a cheap, substantial and permanent rail road, in the construction of which the usual sleepers, chairs, spikes &c., are dispensed with.

In order to enable others to make my invention I will now proceed to describe the manner in which to carry it into effect.

On reference to the accompanying drawing which forms a part of this specification, Figure 1 is a sectional perspective view of my improved railway, Fig. 2 a perspective view showing the manner of connecting the rails together, Fig. 3 a detached view of part of the connections, Fig. 4 a perspective view of a modified rail, Fig. 5 a vertical transverse section of the rail near the joint, Fig. 6 a longitudinal vertical section on the line 1 2, Fig. 2, of parts of the rail at the points where they meet each other, and Fig. 7 a modified plan of securing the rails together.

Similar letters refer to similar parts throughout the several views.

A and A' are two cast iron beams or girders each consisting of a longitudinal plate 12 inches or thereabout in width and having on the underside and at the opposite edges longitudinal ribs or flanges *b, b*. Midway or thereabout between the opposite sides of the girder is an elevated rib *a* forming the tread for receiving the flanged wheels of railway cars. The girders are connected together by means of a dovetailed key B which fits accurately and so that it may be driven tightly into the space between the lugs *e* and *e'* on

the side and at the end of one beam and between the lugs *f f* on the same side and at the end of the adjacent beam. Similar lugs with a similar key are situated on the opposite side of the beams, so that on driving the keys tight to their places they have a tendency, not only to adjust the ends of the two rails in their proper position in respect to each other both vertically and laterally, but to maintain the same in the position to which they have been adjusted thus insuring a uniform coincidence of the treads *a* at the points where the two beams meet each other.

In order that the beams may retain their proper longitudinal position a plate C Fig. 3 is fitted snugly to the underside of the beams where they meet each other and between the transverse ribs *h h* as seen in Fig. 6, bolts passing through these plates as well as through the two adjacent girders so that the latter cannot separate from each other longitudinally. Each of these plates C has a projection *c* in which is a hole for receiving the bent end of a rod D the opposite bent end of the latter fitting into a hole in a similar plate which is secured to the ends of two girders which form a portion of the opposite rail of the track, so that the two lines of girders may be maintained in their proper relative position laterally. In order to afford a still more secure and certain attachment of the ends of the girders to each other dovetailed keys fitting into lugs and similar to those at the sides may be used on the upper surface of the girder and on both sides of the tread *a* as seen in Fig. 7.

Owing to the width of the girders and the rigidity imparted to them by the longitudinal ribs or flanges *b b* and to the firm connection of the girders to each other no other foundation is required than the ground in which the girders are laid, the usual transverse sleepers chairs and spikes being in all cases dispensed with. The soil sand or gravel (as the case may be) which is inclosed laterally by the ribs and tightly compressed in laying the girders forms as it were a portion of the latter, so that there can be no lateral displacement of the girders without disturbing the mass of compressed soil beneath them as well as the neighboring soil. At the same time the width of the plate which forms the body of the girder, and which is bedded directly onto and not

into the ground, is such that no lateral tilting or depression of the girder can take place. In order to lay the girders securely in the ground however so that the ribs may
 5 form a continuous and level tread it is above all things necessary that they should be secured firmly evenly and immovably to each other and this security is so amply provided for by the dovetailed keys above described as
 10 well as by the plates C that should any portion of the foundation of one girder be wanting in solidity the rigidity of the girder itself as well as its secure attachment to the adjacent girder prevents any yielding or
 15 displacement.

The girders owing to their peculiar form may be made so light that when the absence of all sleepers chairs spikes &c. and the comparative facility of laying the girders are
 20 taken into account a railway constructed according to my improvement is much cheaper than those composed of malleable iron rails and is at the same time more solid and durable.

25 In applying my improvement to the construction of city railways I cast on the upper side of the girders transverse ribs *d d* as seen in Fig. 4, as illustrated and described in my patent of Jany. 15, 1861, the tops of
 30 the ribs being level or thereabout with the tops of the treads so as to enable the wheels

of ordinary vehicles to cross the track with ease.

I wish it to be understood that I do not desire to claim broadly a railway composed 35 of cast iron girders bedded into the ground, nor do I claim a cast iron rail with longitudinal strengthening ribs, or a rail consisting of a broad flat plate, with a rib for receiving the treads of the car wheel, nor do 40 I claim securing the rails together, by means of dovetailed keys, but I limit my claim to and desire to secure by Letters Patent for—

A railway composed of two or more cast iron girders, each girder consisting of a 45 broad plate with the longitudinal strengthening flanges *b, b*, below and a longitudinal rib *a* above, when the body of the girder is bedded onto, and the strengthening flanges into the ground described, for the purpose 50 of preventing all liability of the rails to tilt, or to be displaced laterally or vertically, and in order to form a cheaper and permanent railroad, without the aid of sleepers, chairs, and spikes as herein set forth. 55

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

B. C. SMITH.

Witnesses:

HENRY HOWSON,
 JOHN WHITE.