3 Sheets—Sheet 1.

H. L. BUCKNALL.

Railway-Sleepers.

No. 211,697. Patented Jan. 28, 1879.

Fig. 2

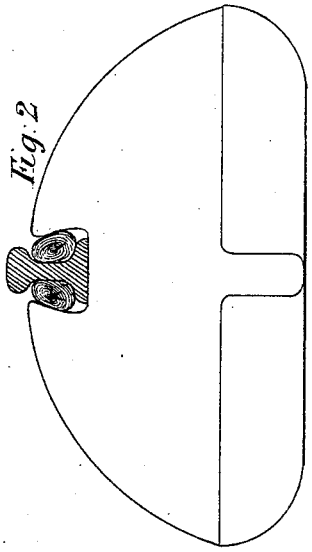


Fig. 4

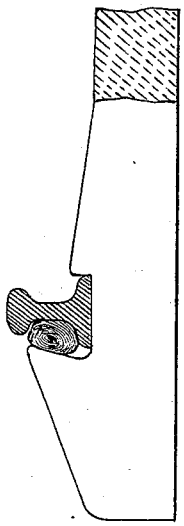


Fig. 6

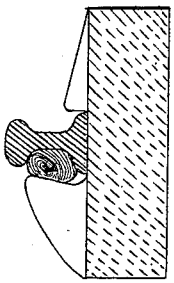


Fig. 1.

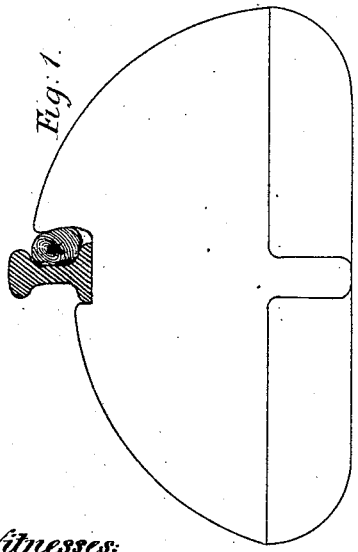


Fig. 3.

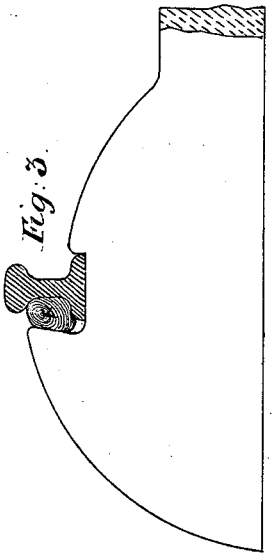
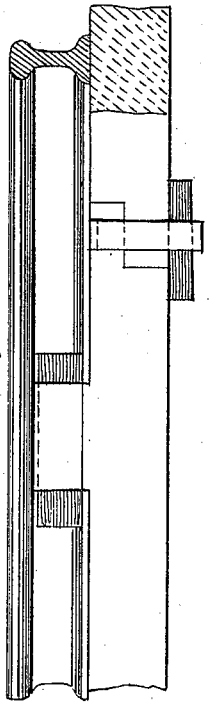


Fig. 5



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3 Sheets—Sheet 2.

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Fig. 8.

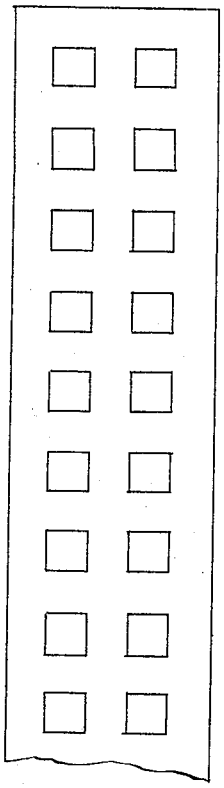


Fig. 2a.

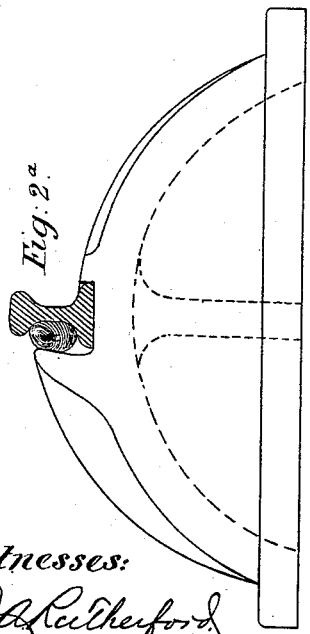
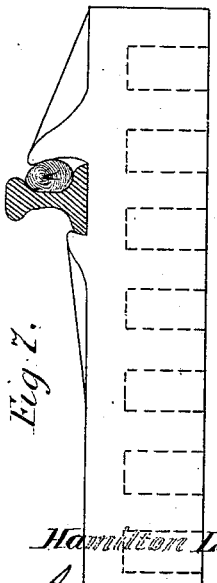


Fig. 7.



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Railway-Sleepers.

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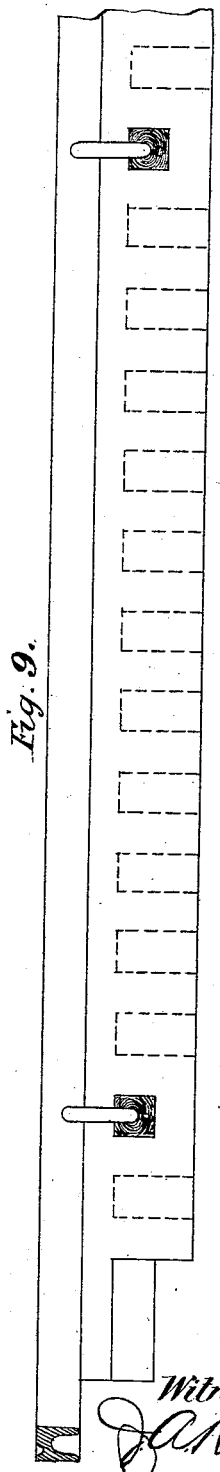

Fig. 9.

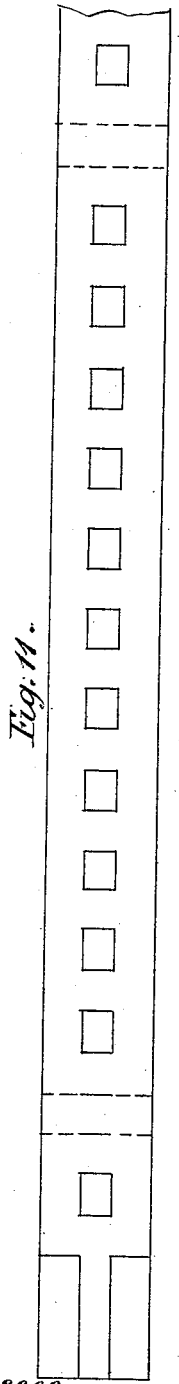

Fig. 11.

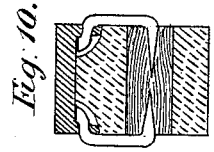

Fig. 10.

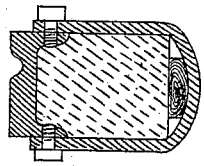

Fig. 13.

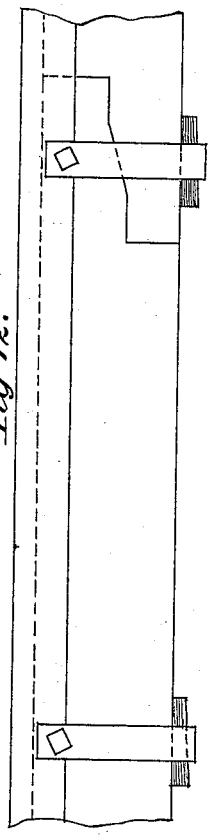

Fig. 12.

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UNITED STATES PATENT OFFICE.

HAMILTON L. BUCKNALL, OF NO. 58 SEYMOUR STREET, PORTMAN SQUARE, ENGLAND.

IMPROVEMENT IN RAILWAY-SLEEPERS.

Specification forming part of Letters Patent No. **211,697**, dated January 28, 1879; application filed September 16, 1878; patented in England, March 4, 1878.

To all whom it may concern:

Be it known that I, HAMILTON LINDSAY BUCKNALL, of No. 58 Seymour street, Portman Square, in the county of Middlesex, England, engineer, have invented an Improved Manufacture of Sleepers for Railways and Tramways; and do hereby declare that the following description, taken in connection with the accompanying sheet of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to secure by Letters Patent—that is to say:

My invention consists in the manufacture of railway and tramway sleepers of glass, the object being to provide a strong and durable material, such as is not liable to decay, and not subject to climatic influences, nor to the ravages of insects. For this purpose I cast the sleepers in glass to the desired forms and dimensions, and carefully anneal them.

The accompanying drawings show some of the forms of glass sleepers which I thus manufacture.

Figure 1 represents a pot-sleeper, having ribs on its under side and a chair-cavity formed in its upper side to receive a flanged rail, and a wooden wedge for securing it. Fig. 2 represents a similar sleeper, having the cavity at the top made to receive a wedge on each side of the rail, so that the gage can be slightly varied, as at curves, by varying the thickness of the two wedges. Fig. 2ª represents a pot-sleeper hollowed out below and cast with a stiffening-rib to strengthen the wedge-cheek. Figs. 3 and 4 represent end portions of transverse sleepers, extending across the line to take both rails. Fig. 5 is a side view, and Fig. 6 a transverse section, of a longitudinal sleeper.

Two such sleepers may be lap-jointed together, as shown in Fig. 5, and clamped by an iron strap secured by a wooden wedge underneath.

Instead of casting the sleepers solid they may, for the sake of lightness and economy of material, be cast with cavities underneath, as shown in the side view, Fig. 7, and plan, looking from below, Fig. 8.

For tram-rails continuous sleepers of glass are made, as shown in the side view, Fig. 9, transverse section, Fig. 10, and plan, looking from below, Fig. 11, the rails being fastened by clamps driven into pieces of wood inserted in holes cast through the sleeper.

According to another arrangement (shown in side view at Fig. 12, and transverse section, Fig. 13) the rail is held down and the jointing of the sleepers is secured by iron bands screwed to the sides of the rail, and passed under the sleeper and tightened by wooden wedges.

Having thus described the nature of my invention, and the best means I know of carrying it out in practice, I claim—

As a new article of manufacture, a railway or tramway sleeper made of cast-glass, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 23d day of August, 1878.

HAMILTON LINDSAY BUCKNALL.

Witnesses:

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20 *Southampton Buildings, W. C.*

JOHN DEAN,
17 *Gracechurch Street, London, E. C.*