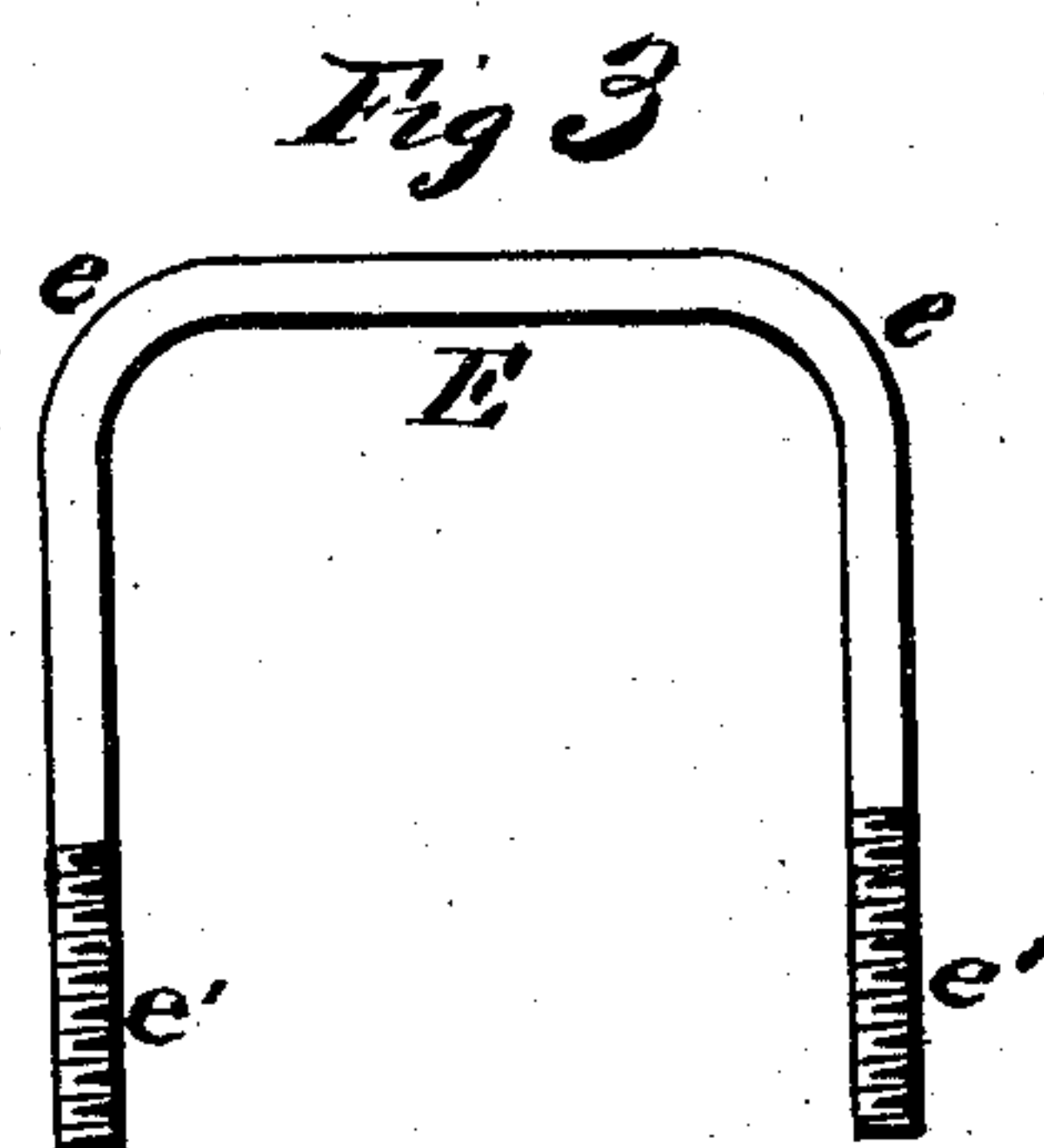
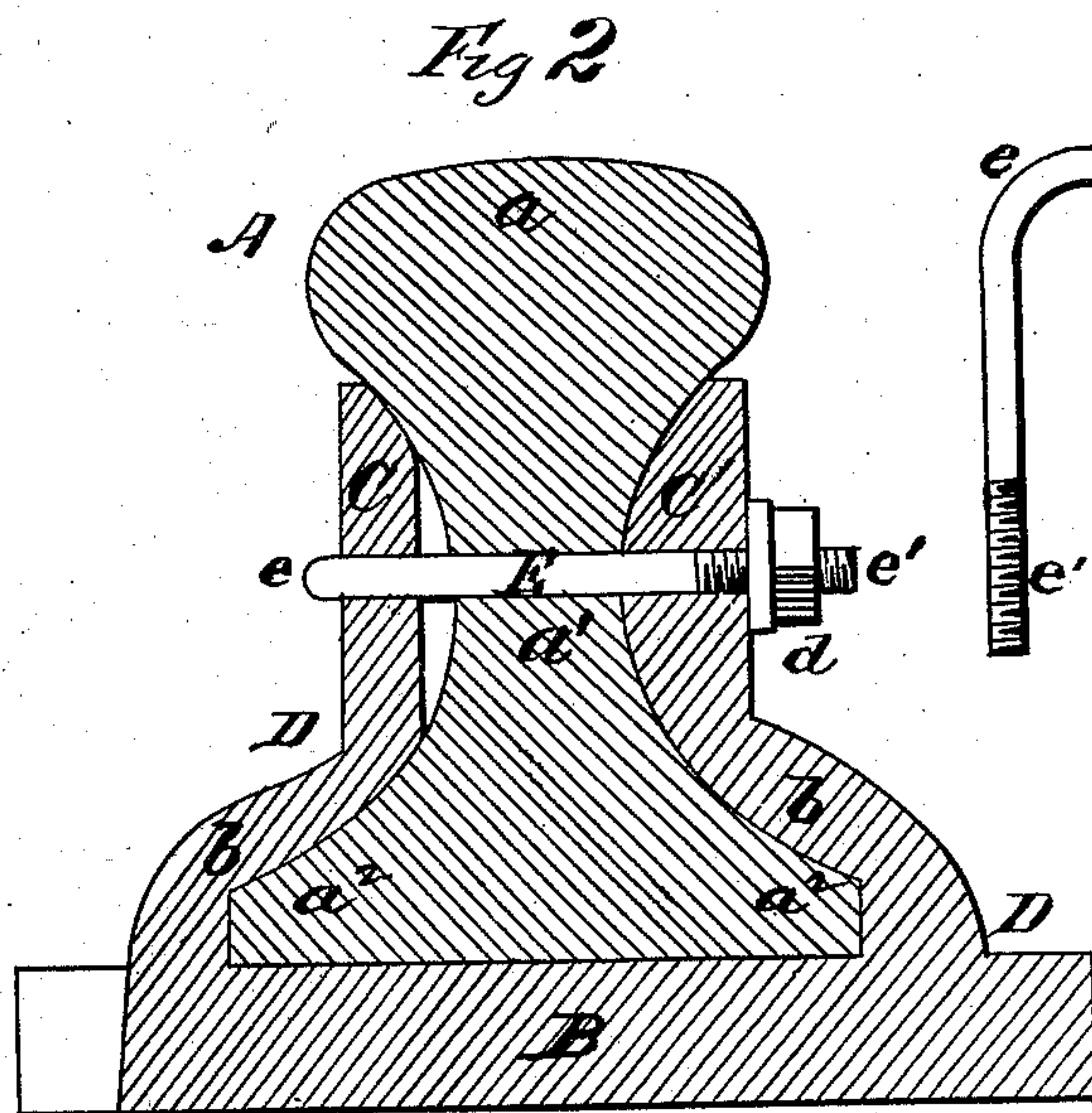
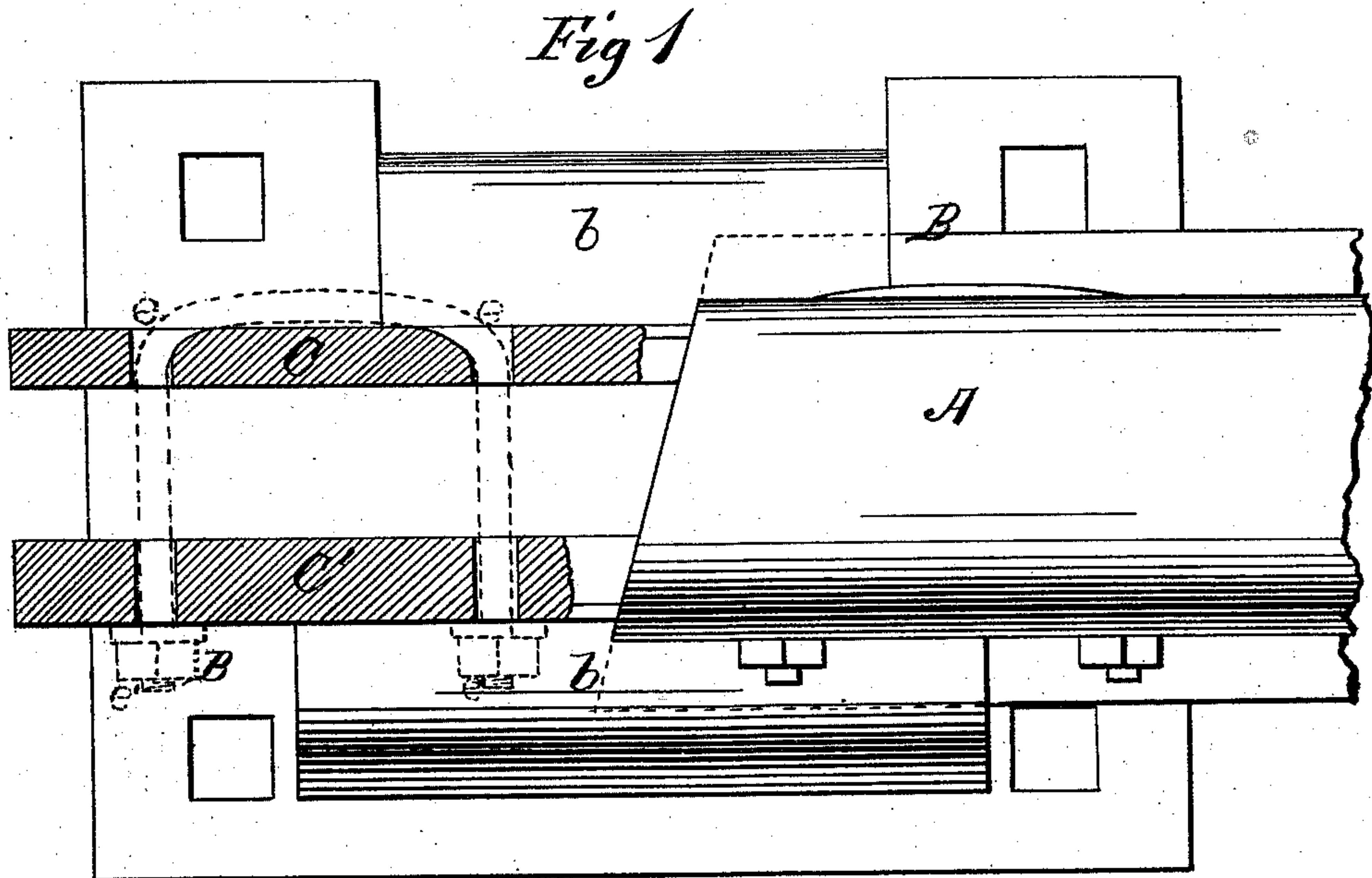


W. H. BURCH & E. J. SMITH.
Railway-Rail Joints.

No. 156,533.

Patented Nov. 3, 1874.



WITNESSES
Robert Everett
E. H. Bates

INVENTORS
William Henry Burch
Elias Jefferson Smith
Chipman & Son & Co

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. BURCH AND ELIAS J. SMITH, OF PORT GIBSON, MISSISSIPPI.

IMPROVEMENT IN RAILWAY-RAIL JOINTS.

Specification forming part of Letters Patent No. 156,533, dated November 3, 1874; application filed September 12, 1874.

To all whom it may concern:

Be it known that we, WILLIAM HENRY BURCH and ELIAS JEFFERSON SMITH, of Port Gibson, in the county of Claiborne and State of Mississippi, have invented a new and valuable Improvement in Railroad-Chairs; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of our railroad-chair. Fig. 2 is a vertical sectional view; and Fig. 3 is a detail view of the same.

This invention has relation to chairs for holding in a rigid position the rails of a railway; and the novelty consists in flanges erected above the hooks or bends of a chair, whereby I am enabled to construct in one part the ordinary chair and fish-plates for holding in place with regard to each two rails when the said flanged chair is applied to the two rails at their joint, and whereby I am enabled to cause the bend or hooking part of the chair to exercise a clamping action upon the flanges of the rails, thereby greatly increasing the power of resistance of the said chair against their endwise displacement when the said flanges are bolted in a suitable manner to the neck of the rails. It also consists in a staple-shaped bolt, one applied through suitable perforations in the flanges and in a rail, at each side of the rail-joint, whereby the rail and the flanges are allowed to expand and contract laterally, under varying degrees of heat and cold, without loosening the nuts used to hold the bolts in position, all as will be hereinafter more fully explained.

In the annexed drawings, A designates an ordinary T-rail, having a head, a , neck a^1 , and base-flanges a^2 , of the usual well-known form. B designates the base of my improved chair, having hooks or bends b , the inner convexity of which conforms to the concavities of the base-flanges a^2 of the rail. Upon these bends are vertically-placed flanges C C', having the functions of the usual fish-plate, and which are bolted to the neck of the rail for the

purpose of holding the ends of two rails in close contact across their joint. The base B, bends b , and flanges C C' are in one piece, which I shall now designate by the letter D, and which may be either of malleable cast-iron or of wrought-iron. Where malleable iron is employed the flanges will be preferably of the form shown at C', in Fig. 2—that is to say, the interior convex surface of the flanges will conform nearly to the contour of the concavity of the neck a^1 , but when wrought-iron is used I prefer that the said flanges should be of the shape shown at C, in the same figure, where a space will be observed between the inner surface of the flange and the neck of the rail. E designates a staple-shaped bolt, having rounded bends $e e$ and screw-threaded ends e' , as shown in Fig. 3, one of which is passed through registering perforations in the flanges and in the neck of the rail, at each side of the joint of two rails, the chair having been previously so arranged as to break joints therewith. When the bolts E are passed into the above-mentioned perforations, their bends are received into rounding grooves in the flanges and their heads in a comparatively shallow groove between the said perforations, and if now the nuts d be screwed upon the screw-threaded ends e' of the bolts, the flanges will be drawn inward toward each other, causing the bends b to be forcibly drawn down upon the base-flanges a^2 of the rail A and immovably holding it against endwise displacement, while at the same time allowing it to expand and contract under the influence of high or low temperatures. Owing to the rounding shape of the bends e of the staple-bolts E, they will not have their heads completely straightened when they are screwed up and secured in their places; they will, on the contrary, still preserve a slightly-rounding shape, hence, opposing no unyielding resistance to the strain consequent upon the expansion of the rail and the flanges of the chair under high temperature, the nuts upon their screw-threaded ends are not liable to be loosened or broken off thereby, and, not having been loosened or strained, a sudden change from a high to a low degree of temperature will cause the said staples to return to their normal condition with unim-

paired powers for holding the flanges of the chair in close and perfect contact with the neck of the rail.

What I claim as new, and desire to secure by Letters Patent, is—

The combination with the vertical flanges $C\ C'$, at each side of the web of the rails and the clamping bends $b\ b$ of the staple-bolts E , one at each side of the rail-joint, as specified.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

WILLIAM HENRY BURCH.
ELIAS JEFFERSON SMITH.

Witnesses:

JNO. C. WATKINS,
F. H. SMITH.