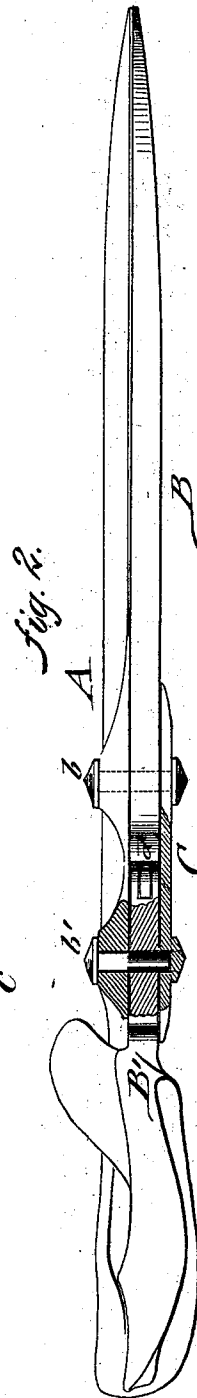
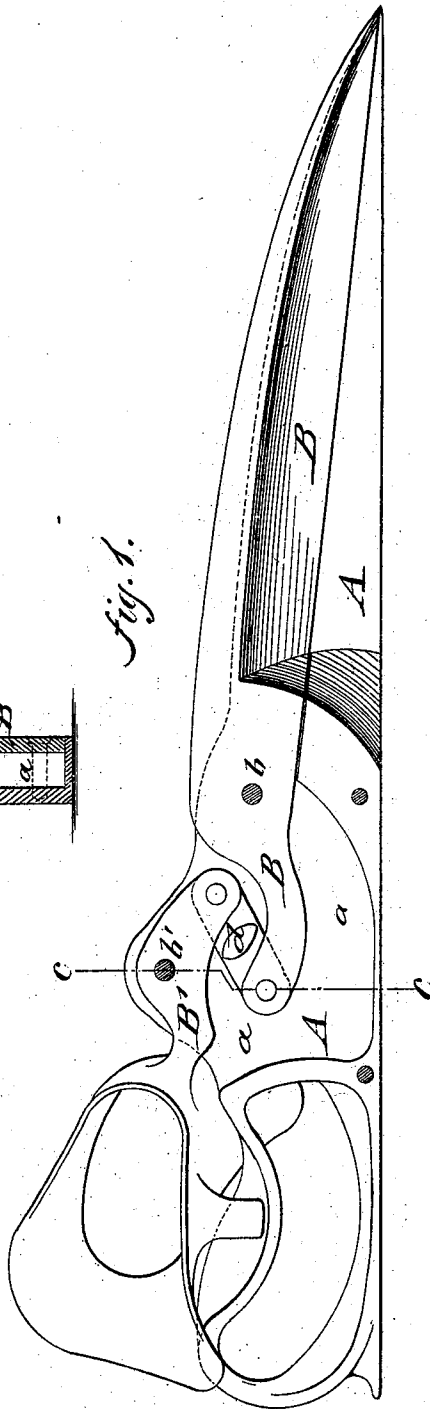
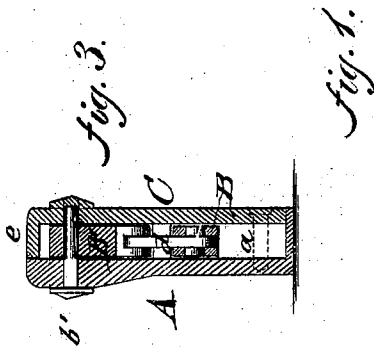


T. HUMPHRIES.

SHEARS.

No. 173,010.

Patented Feb. 1, 1876.



WITNESSES:
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A. B. IBBOTSON.
RAILROAD RAIL-JOINTS.

No. 173,012.

Patented Feb. 1, 1876.

Fig. 3.

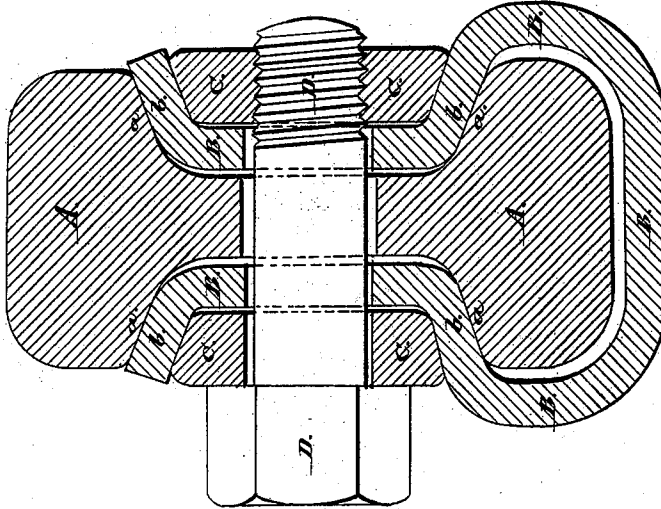
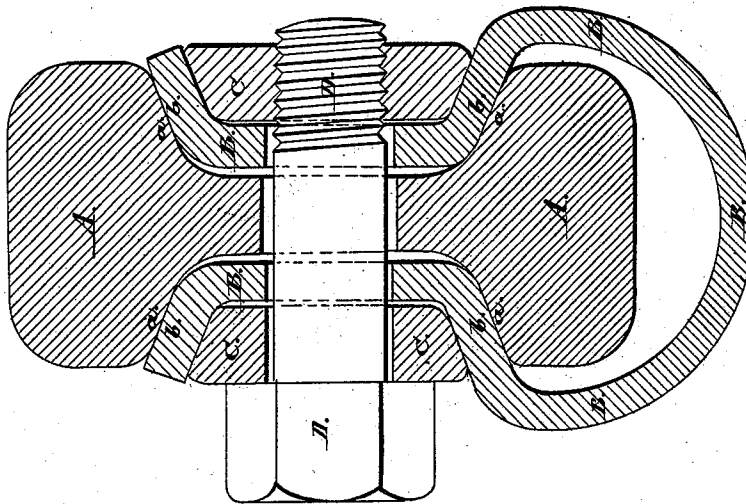


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

ALFRED BUCKINGHAM IBBOTSON, OF SHEFFIELD, ENGLAND.

IMPROVEMENT IN RAILROAD-RAIL JOINTS.

Specification forming part of Letters Patent No. **173,012**, dated February 1, 1876; application filed November 27, 1869.

To all whom it may concern:

Be it known that I, ALFRED BUCKINGHAM IBBOTSON, of Sheffield, in the county of York, England, have invented certain new and useful Improvements in Joints for Uniting and Securing the Ends of Railway-Rails, of which the following is a specification:

This invention consists in uniting together and supporting the ends of railroad-rails by means of a combined fastening device, consisting of a metal sheath or clip, formed in one piece with such of the internal parts as are intended to touch the rails, being formed with inclined flattened surfaces or seats throughout its entire length, which fit against and correspond with the inclined or sloping portions under the heads and upper portions of the base of the rail, the same being held tightly against these said parts of the rails, when fixed thereon, by means of supporting external fish-plates having inclined edges, to fit against the corresponding external parts of the sheath, and which fish-plates are operated upon by one or more bolts or set-screws passing through the fish-plates, sheath, and body of the rails, the distinctive features of which will now be set forth in detail.

In the accompanying drawing, A represents the railroad-rail, having formed upon the upper portion of the base and the under portion of its head the inclined flattened seats *a a*, extending throughout its length, for a purpose hereinafter to be mentioned. B is a metallic sheath, formed in one piece, of "Bessemer steel," or its equivalent, to envelop the sides and base of the rails, and to gripe only against the sloping parts of the rails under the heads, and against the sloping top of the flanges or lower heads of same, forming the base of the rails. The sheath is so formed that its internal or external figure, when produced, will nearly correspond to the external shape of the rail, the top portion of the sheath being so shaped that its projecting supports or arms will project a little beyond the sides underneath the heads of the rails. The internal surfaces of the sheath, at the parts intended to bear against the sloping under portion of the heads and the sloping top portions of the base of the rails, are formed throughout its length with inclined flattened seats *b b*, so

as to fit smoothly and snugly upon the said inclined sloping portions *a a* of the rail A; hence, when the sheath is placed upon the rails, and its said opposite flattened parts or sides are drawn or held tightly against the rails, the said two inclined flat portions will act in conjunction and permit the sheath to be evenly and nicely seated, and afford vertical strength and elasticity. C C are metallic fish-plates, the bolt hole or holes in one having a smooth interior surface, and the hole or holes in the other a threaded one or threaded ones, so that the latter serves the purpose of a long immovable nut for a bolt or bolts, D, and both fish-plates not only serve to keep tight and strengthen the sheath B, but afford great additional vertical and lateral support to the ends of the rails jointed. These fish-plates are each formed of Bessemer steel, or its equivalent, with inclined edges, and are arranged on the outside of the sheath B, as shown, so that when the bolt or bolts D is or are passed through one of the fish-plates, and thence through the body of the rail and the metal sheath, and its or their threaded end or ends is or are screwed into the threaded fish-plate, and screwed up tightly, the fish-plates will be drawn toward each other, and compress or force up against the sides of the rails the embracing and supporting sheath B at the said inclined flattened surfaces *a a b b* of the rail and sheath, so forming an extremely tight and substantial joint. The projecting arm or extension on the top part of the sheath supports the under part of the rail-head, and, by their use, the fish-plates C C serve as fish or supporting plates, and one of them as a nut for the bolt or bolts D, and, at the same time, the said fish-plate is prevented from turning and becoming detached by jolting or otherwise, as it cannot revolve when placed in position, owing to its inclined edges being kept tightly pressed against the sheath B throughout its entire length. In securing the whole in position, the bolt or bolts only is or are turned, and when the several parts are firmly united by the bolt or bolts D, the fish-plates will support the top portions of the clip, while the latter supports the heads of the rails.

By this construction of the several parts herein shown and mentioned, the ends of the

railroad-rails can be firmly and securely bound together, and the said fish-plate, so screwed up, will always retain the parts in close proximity, and prevent the danger of detachment of parts caused by the vibration of trains, so common with ordinary bolts and nuts.

It will be seen that the entire space outside of the vertical portion of the rail is inclosed by the sheath and the external fish-plates throughout their length, so that they together receive the whole of the weight, and form a strong quadruple girder-joint.

I do not claim, broadly, a clip for embracing the ends of railroad-rails, as such is not new; but,

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The sheath B, formed in one piece, with internal inclined flattened seats *b b*, to fit the inclined flattened seats *a a* of the rail, in combination with the external fish-plates C C, formed with inclined edges, the several parts constructed as shown, and united together by the bolt or bolts D, in the manner and for the purpose set forth, to form a quadruple girder-joint for rails, or a rail-joint, as described, with four vertical supporting parts to the heads of the rails.

ALFRED BUCKINGHAM IBBOTSON.

Witnesses:

JOHN GEORGE SHILLITO,
JOSEPH COOPER.