(No Model.)

W. BUTCHER.

Railway Fish Plate.

No. 234,529. **Patented Nov. 16, 1880.**

Fig. 1

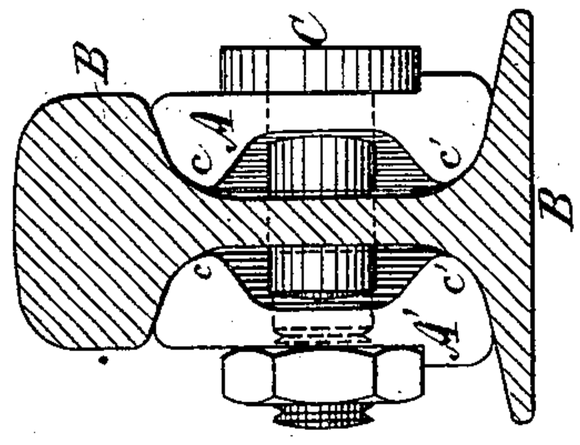


Fig. 2

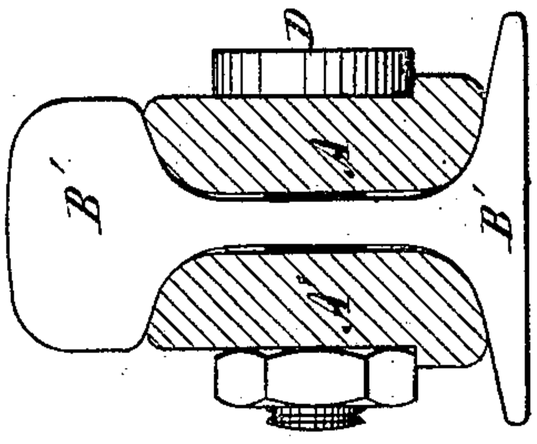
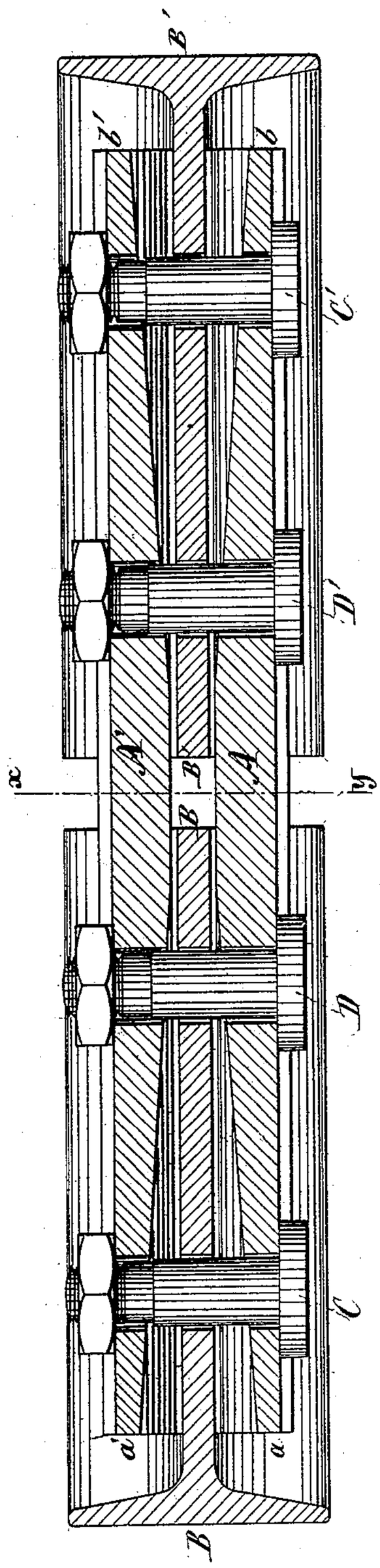


Fig. 3



Witnesses
Louis Bagaull
Aug. Finch

Inventor
William Butcher

UNITED STATES PATENT OFFICE.

WILLIAM BUTCHER, OF LONDON, ENGLAND.

RAILWAY FISH-PLATE.

SPECIFICATION forming part of Letters Patent No. 234,529, dated November 16, 1880.

Application filed October 19, 1880. (No model.) Patented in France August 4, 1880; in Belgium August 6, 1880.

To all whom it may concern:

Be it known that I, WILLIAM BUTCHER, of London, England, have invented a new and useful Improvement in Railway Fish-Plates, of which the following specification is a full description.

This invention has for its object to more perfectly unite the extremities of two rails by means of fish-plates; and it consists in the new method of constructing the same, substantially as hereinafter described.

By the use of the new fish-plates a more solid and rigid connection is effected than by fish-plates heretofore in use.

A chief advantage of the new fish-plates resides in the diminution of their weight, while at the same time greater elasticity and a more perfect clamping of the rails by them are effected.

It is well known that when a locomotive or train of cars passes over the rails there is a jar of the ground and a vibration of the rails, which causes the loosening of the bolts, and as a result the fish-plates are loosened and the rails themselves less firmly connected, and it follows that the weight of the train upon each rail causes it to sink below the level of the rail that succeeds it, thereby occasioning successive shocks to the vehicle. These rapidly-succeeding shocks are the principal cause of the rapid deterioration of the rolling material upon railroads. On the other hand experience has demonstrated that all effort of resistance to these successive and accumulated shocks or retardations to the progress of the train or locomotive is transmitted to the fish-bolts, the effect being most severe upon the first bolt and diminishing toward the middle of the fish-plate, which part corresponds with the space left between the two rails.

The present invention is designed to overcome these difficulties; and it consists in an elastic fish plate or bar, thickest in the middle and tapering toward its ends, whereby a strong locking or clamping of the two extremities, and consequently a more solid joint for the two rails, is obtained. Moreover, this form of fish-plate is less liable than those now in general use to be affected by the shocks occasioned by the passage of a train.

The accompanying drawings, which form a part of this specification, illustrate an elastic ribbed fish-plate constructed in accordance with the present invention.

Figure 1 is a section of a rail with the ends of fish-plate exposed; Fig. 2, a vertical section on line *x y*, Fig. 3; and Fig. 3, a longitudinal section of a rail and fish-plates.

As is seen in Fig. 3, the thickest part of the plates A A′ is in the middle, and the thickness gradually diminishes toward the two extremities, *a a′ b b′*. The plates do not press against the rails B B′, except at their ribbed portion *c c′*. The fish-bolts C C′ at the two extremities of the plate are tightened against the thinnest portion of the plates, so that the elasticity of said plates prevents them from becoming loose. The effect of this elasticity of the plates A A′ is also felt at the bolts D D′, but in a less degree, the extreme bolts, C C′, being, as has been said, the ones most liable to become loosened by the shocks occasioned by the passage of a train. This disposition of the fish-bolts in the concavity or hollowed portion of the plates A A′ serves to insure a perfectly-rigid joint between the two rails, effectually resisting all tendency of the bolts to become loosened, and preventing shocks or opposition to the passing train.

Independently of these practical advantages the use of the present invention realizes considerable economy in the material employed in constructing fish-plates, which is an important consideration where a large number of these articles are used, as upon long lines of railroad.

The form of fish-plate shown and described is the one deemed preferable, and is considered to embody the best manner of carrying the invention into effect; but it is evident that it will admit of many modifications without departing from the spirit of the invention, the object of which is, broadly, to produce a fish-plate for use in the construction of railway-lines, rendered elastic by being made to taper gradually from the middle toward the two ends, whereby lightness, rigidity, and permanence are given to the joint between the two rails connected thereby.

The invention is not limited to any particular material, as under different circumstances

different materials may be used to greatest advantage.

Having now fully described the said invention and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

An elastic fish-plate, as described, thickest at the middle and tapering toward its ends, and having ribs at the two extremities, as set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

WILLIAM BUTCHER.

Witnesses:
EMILE BARRAULT,
AUG. VINCK.