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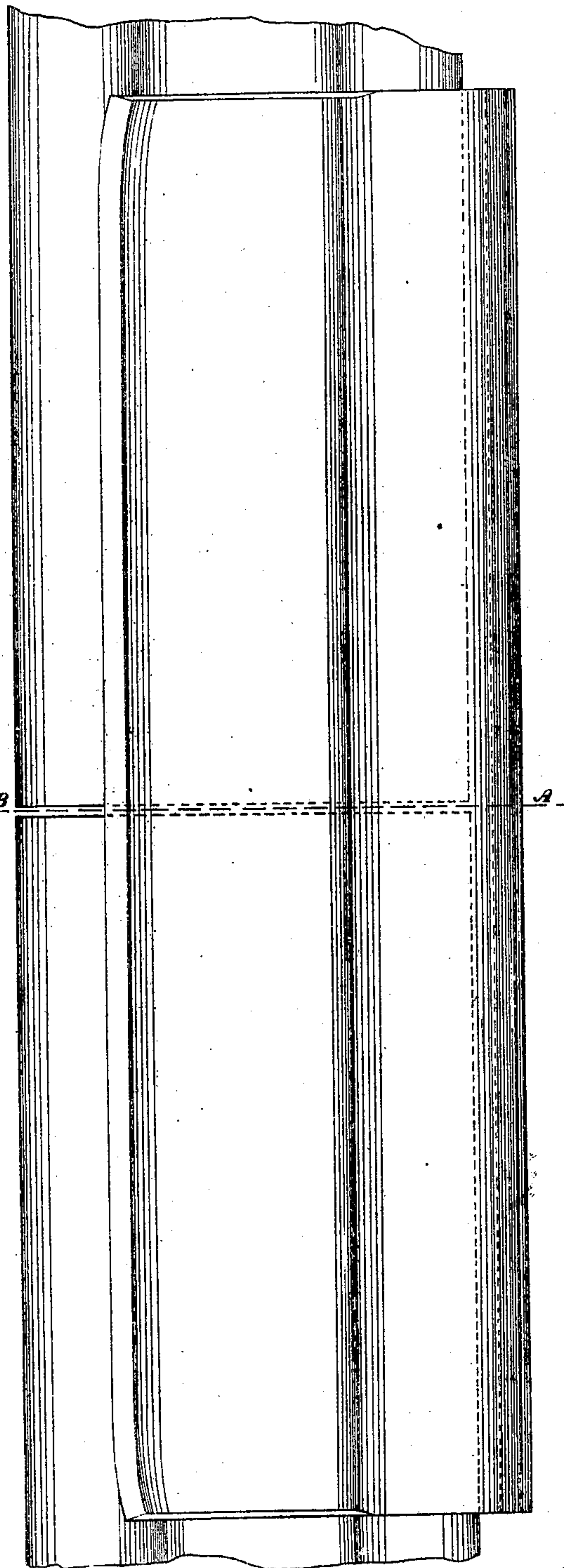
G. E. Dering.

Railway Rail Splice

N^o 92,021

Patented Jun. 29. 1869.

Fig. 1.
Side view of clip joint.



Witnesses.

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Nº 92,021.

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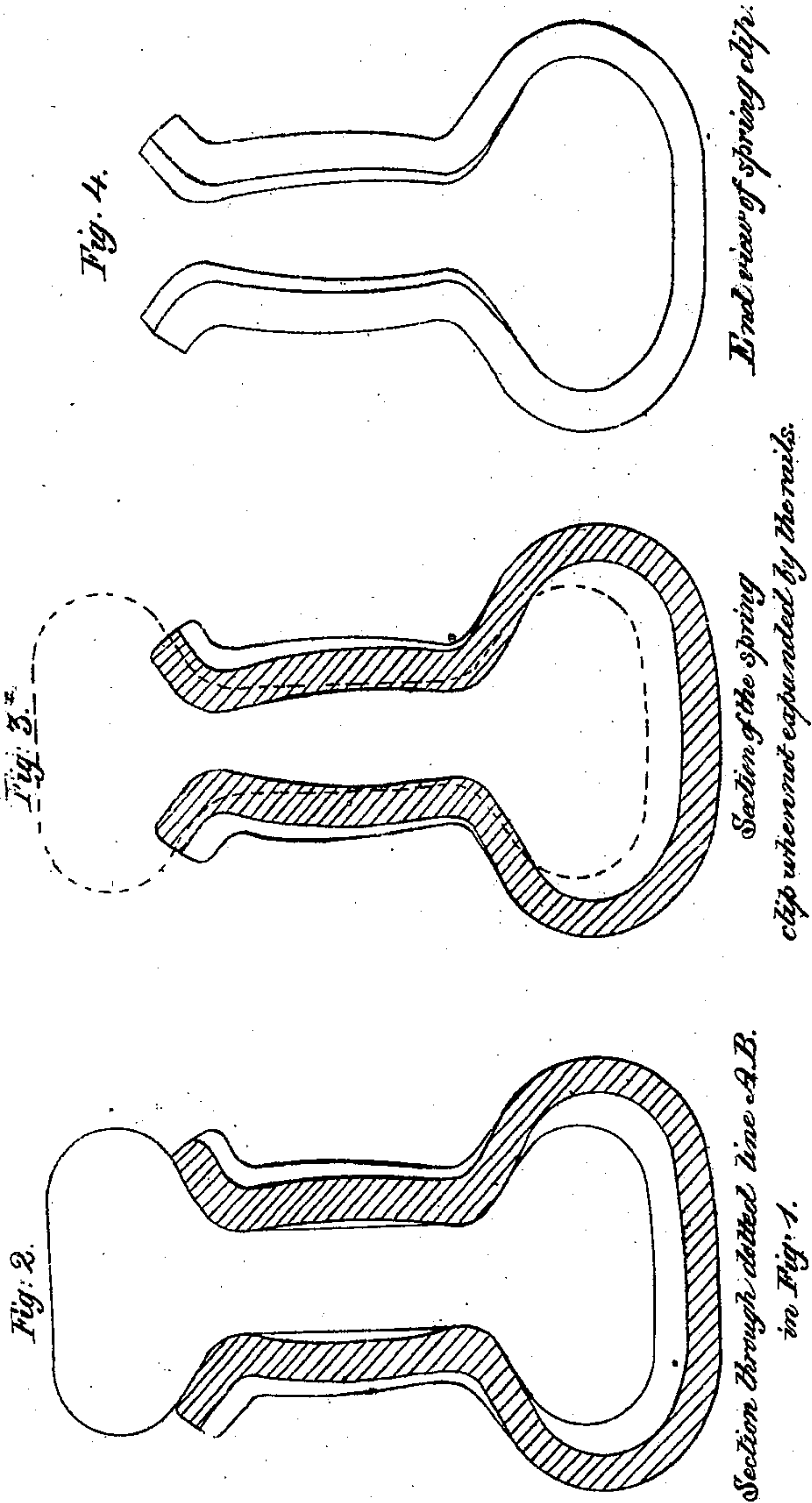
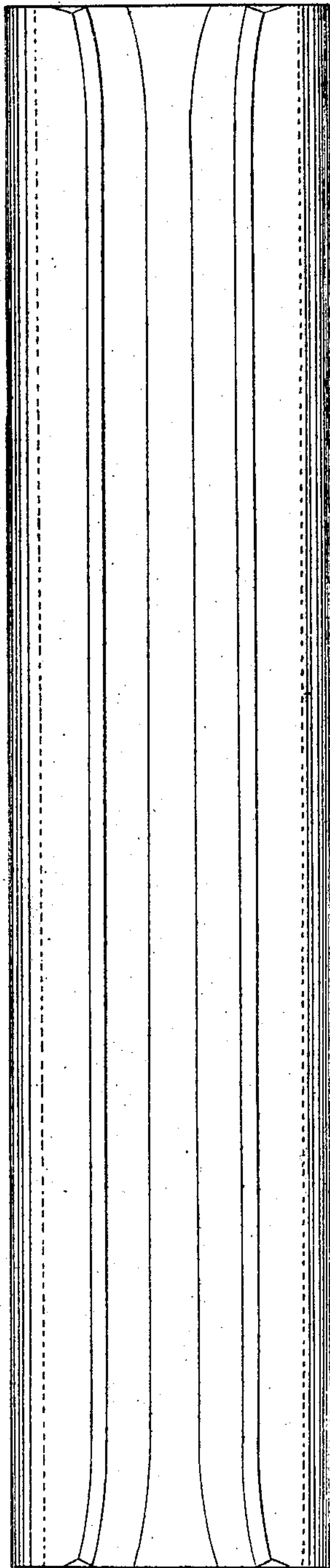


Fig. 5.
Plan of spring clip.



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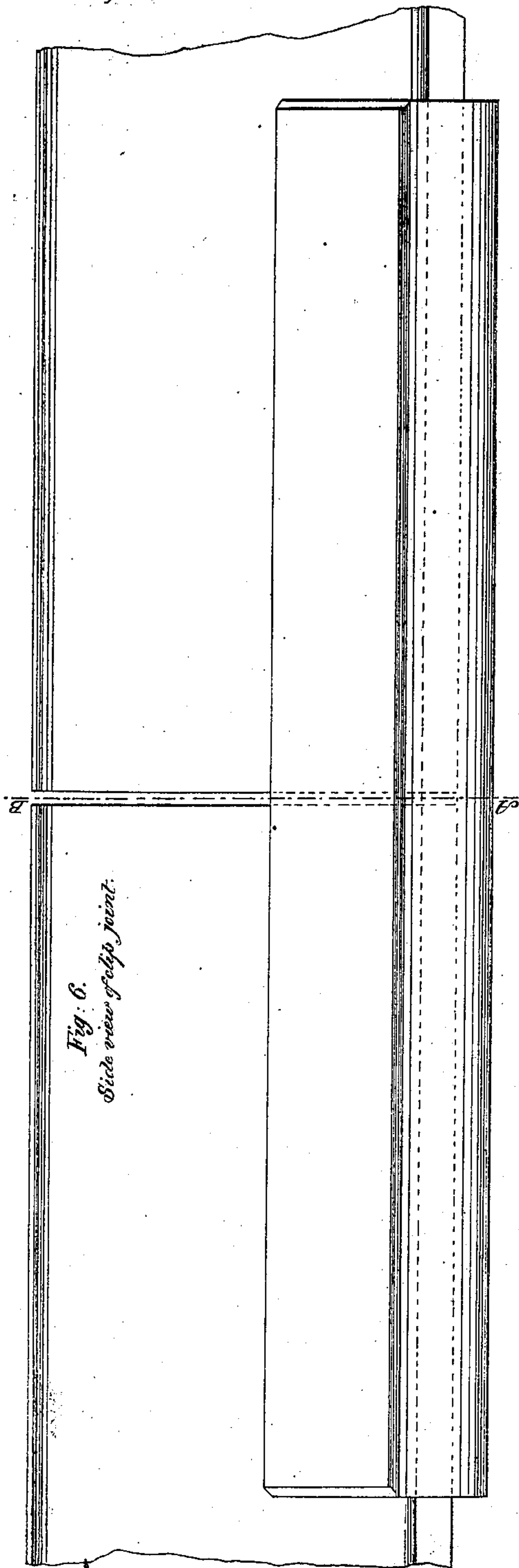


Fig. 6.
Side view of clip joint.

Fig. 9.
End view of spring clip.

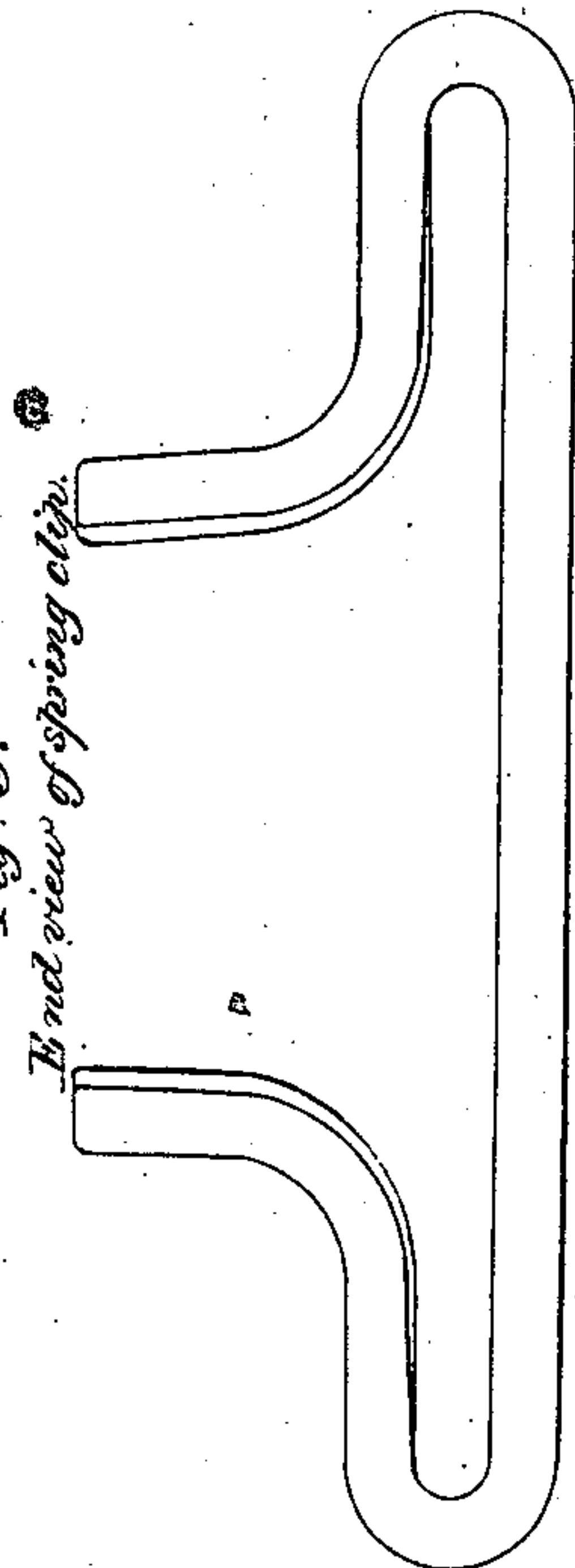


Fig. 8.
Section of the spring clip when not expanded by the rails.

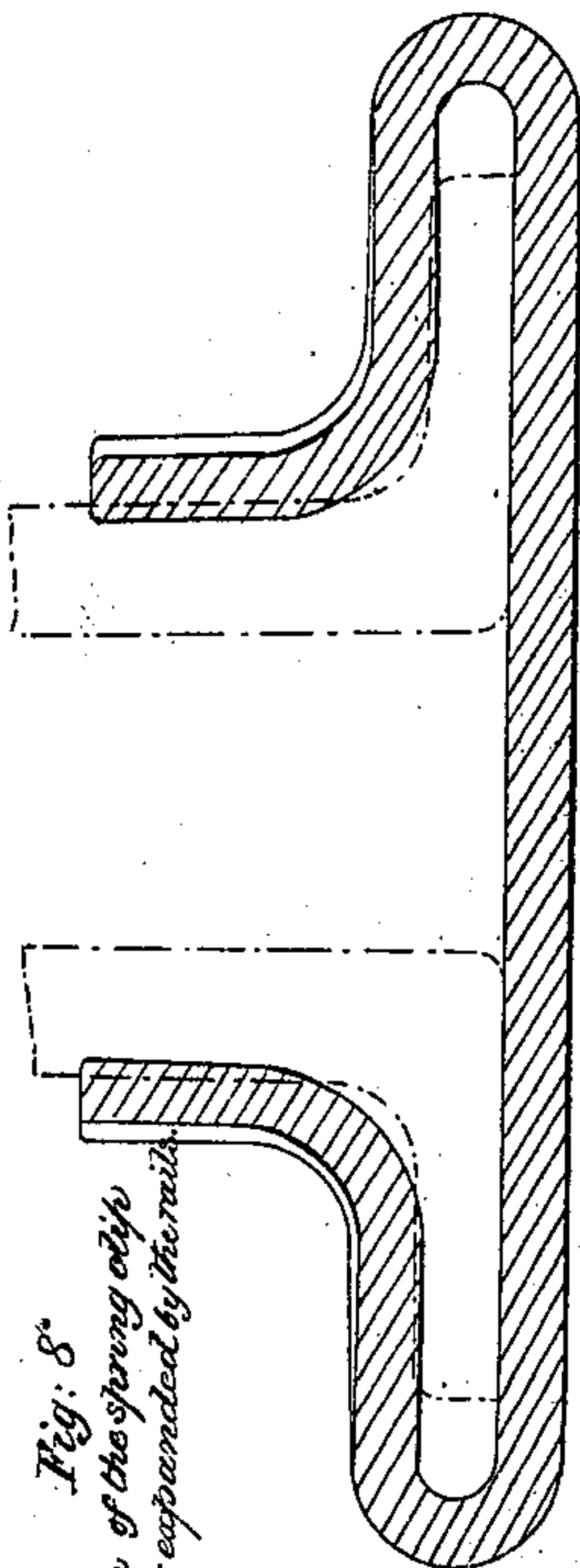
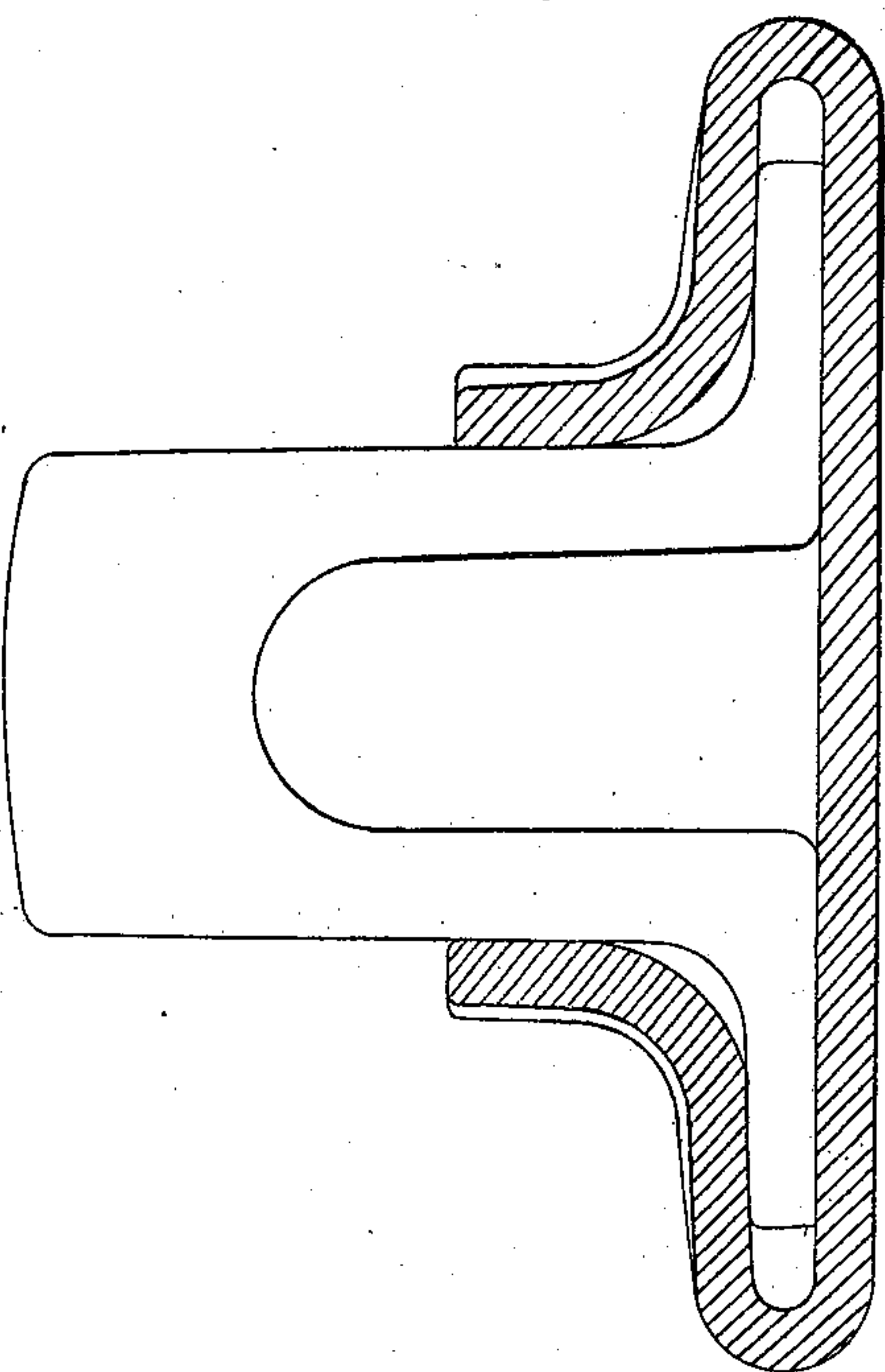


Fig. 7.
Section through dotted line A.B. in Fig. 6.



Witnesses

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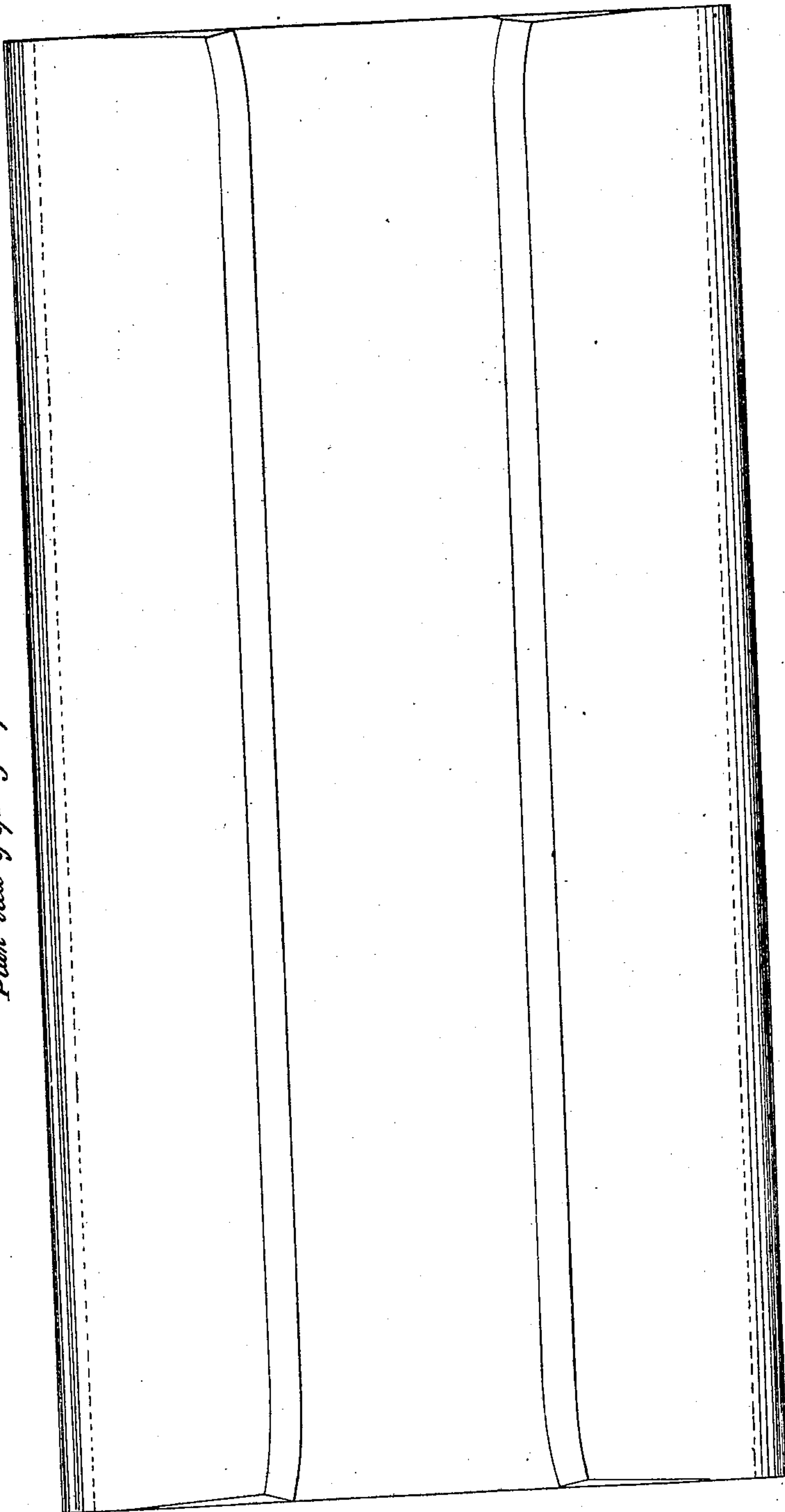
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Fig. 9
Plan view of spring clip.



Witnesses.

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Letters Patent No. 92,021, dated June 29, 1869; patented in England, November 23, 1860.

IMPROVED RAILWAY-RAIL SPLICE.

The Schedule referred to in these Letters Patent and making part of the same.

To all to whom these presents shall come:

Be it known that I, GEORGE EDWARD DERING, of Lockleys, near Welwyn, Herts, England, am in possession of an invention for "Improvements in the Permanent Ways of Railways;" and I, the said GEORGE EDWARD DERING, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof; that is to say—

This invention has for its object improvements in the permanent ways of railways. To this end,

My invention consists in the manufacture of the fastenings of the joints and various connections of parts of the permanent ways of railways, of permanently-elastic metal, either by forming them of steel, and subsequently tempering them, or of wrought-iron, and subsequently case or surface-hardening them, so that they have a steel face; hence, when they are applied, they make and keep tight, by virtue of their elasticity, the various connections of the permanent way of a railway, and they are used in place of or in addition to other fastenings now employed.

One mode in which I have contemplated the application of the principle or character which distinguishes my invention, is to construct the fastenings in the form of a clip, which partly embraces the abutting-ends of the rails, passing underneath them, and the upper parts of such clip press upon the sides of the two rails, and upon their extended base, in the case of bridge-rails.

These clips, if made of steel, are tempered, or if of wrought-iron, they are case or surface-hardened, and by their elasticity, the ends of the two rails are held forcibly and securely in juxtaposition, an interval being allowed for the expansion of the rails, if desirable.

It is advantageous to form both ends of the clips with the edge slightly bevelled on the inside, or bent outward, so as to afford the ends of the rails a more easy entrance; and in laying down the line of rails, the clips are forced into their position, over the intended joint, by blows or pressure in a horizontal direction.

Any single rail can at any time be easily and quickly removed from a line jointed by means of these clips, by driving those at its two extremities from off the joints, wholly on to one or other of the two contiguous rails; and when the rail is replaced, the joints are made secure again by a converse operation.

Bolts and nuts, screws, rivets, or other fastenings, may be employed in combination with the elastic clip, with a view to rendering the joint more secure, although I do not consider such to be generally necessary or advantageous.

In some cases, as a safeguard against fracture, I construct the clips after the fashion of double or compound springs, instead of their consisting of a single thickness of metal; but I prefer to employ single springs, and, as a precaution, I test each one before being sent out from the manufactory, which testing is performed at a rapid rate, by means of a simple piece of mechanism, actuated by hand or steam-power, by the action of which the clip is forced open to a definite extent, more than it ever can be, under any circumstances, when in actual use.

Another mode of applying the principle of this invention, is in the form of spring-fastenings, of steel, or case or surface-hardened iron, for keeping tight fish-plates of the ordinary description, which springs are made, with greatest advantage, of suitable form to be placed between the nut or bolt-heads and the fish-plate, on one or both sides; or the bolt by which the fish-plates are held in position may be a spring, slotted, and having a tendency to open outward, thus preventing, by friction, the slacking of the nut; or, conversely, a slotted spring-nut may be employed; or the fish-plates may be made of elastic metal, and compressed somewhat out of their normal shape by the bolts and nuts or other fastening, thus keeping the joint tight and rigid.

Although I consider the several kinds of permanently-elastic metal rail-fastenings last described to possess important advantages over the different systems at present in use, I much prefer, to any of them, the simple elastic clip-joint hereinbefore fully described, since perfect joints are thus obtained by the application of a single piece of metal, in place of using ten or more separate parts; and, owing to the simplicity of the arrangement, no attention or labor is required to maintain the joints perfect, there being no parts that can possibly become loosened by wear and tear of the traffic, or other causes.

In making permanently-elastic metal railway fastenings in the form of keys, wedges, tree-nails, or spikes, according to this invention, they are formed hollow, or slotted, or split, in any of the forms in which such hollow or slotted or split iron fastenings have been heretofore made, or of any other suitable forms; and they are tempered, if made of steel, or if of wrought-iron, they are case or surface-hardened, for the purpose of rendering them elastic, in order that they may possess a sufficient tendency to return to their original form after they have been bent or compressed out of such original form.

By the term "permanently-elastic metal," I mean metal that is, for practical purposes, permanently elastic, and can therefore be relied upon to operate with a spring-like action, as distinguished from ordinary

wrought-iron, which is practically so inelastic that it cannot be relied upon to act as a spring.

I wish to state distinctly that although I, in general, prefer to employ the kind known in the market as spring steel, this invention is by no means limited to the use of steel of any particular description, quality, or temper, provided only that it possess a suitable degree of elasticity for the office it is intended to fulfil, and I sometimes temper differently different parts of the same clip or fastening.

By the term "wrought-iron," throughout the description of this invention, I intend to signify iron, converted, by any treatment whatsoever, from the condition of crude cast-iron, not less than sufficiently to admit of being fitted for the purposes in view, by a case or surface-hardening process; and with regard to the case or surface-hardening, various means are efficient for this object, as is well understood, and I do not confine myself to any in particular. In some cases it is advisable that a portion only of the clip or fastening be so treated; and to the case or surface-hardening I sometimes superadd a tempering-process.

Nor do I restrict myself to any specific shapes or dimensions, as such are best determined according to circumstances, by the engineer of the particular line of railway in question.

I may mention, however, that the clips for uniting the rail-ends may vary from about one-eighth of an inch to half an inch in thickness, and from about six inches to twenty-four inches in length; and the hollow keys and tree-nails, which need not differ materially, in external figure, from the wooden ones now in common use, may be made of sheet-metal, varying from about one-sixteenth to one-fourth of an inch in thickness.

I have not thought it requisite to describe the process of manufacturing the clips, keys, tree-nails, and

other fastenings, since various methods of doing so will suggest themselves to any person moderately conversant with the operation of metal-shaping machinery; and it will be obvious that they can be formed at a rapid and cheap rate, by the aid of such means worked by steam-power.

It is hardly necessary to observe that the tempering, and case or surface-hardening, are the final operations performed in the course of manufacture.

As a preventive against rust, I recommend that the clips and other fastenings, more particularly the hollow keys and tree-nails, be immersed in heated gas-tar, or other suitable matter, which is best done before they cool, after tempering, or case or surface-hardening, has been effected.

Figures 1, 2, 3, 4, and 5, of the drawings, show the elastic clip as applied for connecting rails of the double-headed form.

Figures 6, 7, 8, 9, and 10, show the same as applied to the description known as bridge-rails.

Having thus described the nature of my said invention, and the several modes in which I have contemplated the application of the principle or character by which it may be distinguished from others, I would have it understood that I do not, in any respect, confine myself to the details herein contained, as the mode of putting the invention into practice may be greatly varied; but

What I claim, is—

Railway-fastenings of permanently-elastic metal, (either steel-tempered or wrought-iron case or surface-hardened,) such fastenings constituting a new manufacture.

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